QUARTZ SYNTHESIZER AM-FM STEREO TUNER

KT-990D

SERVICE MANUAL

KENWOOD 1649

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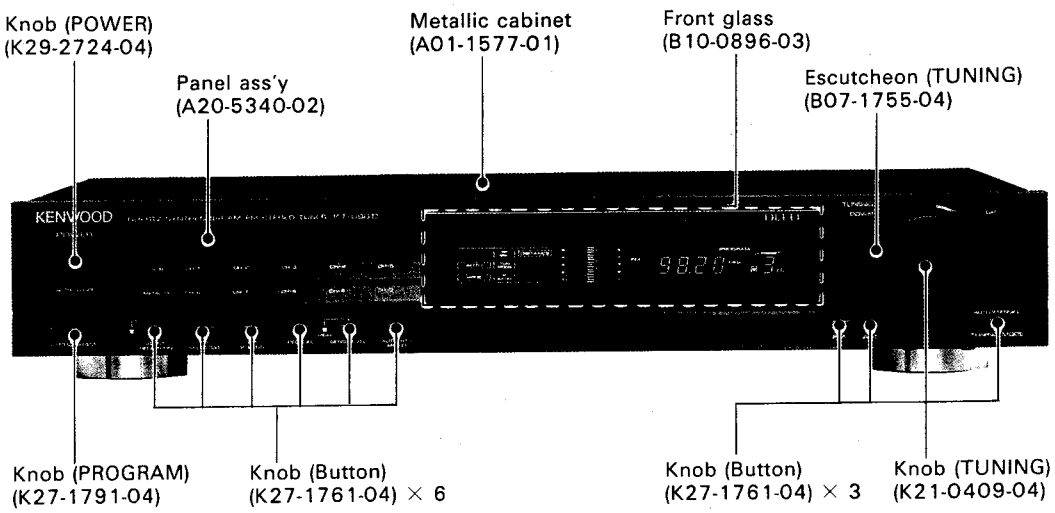

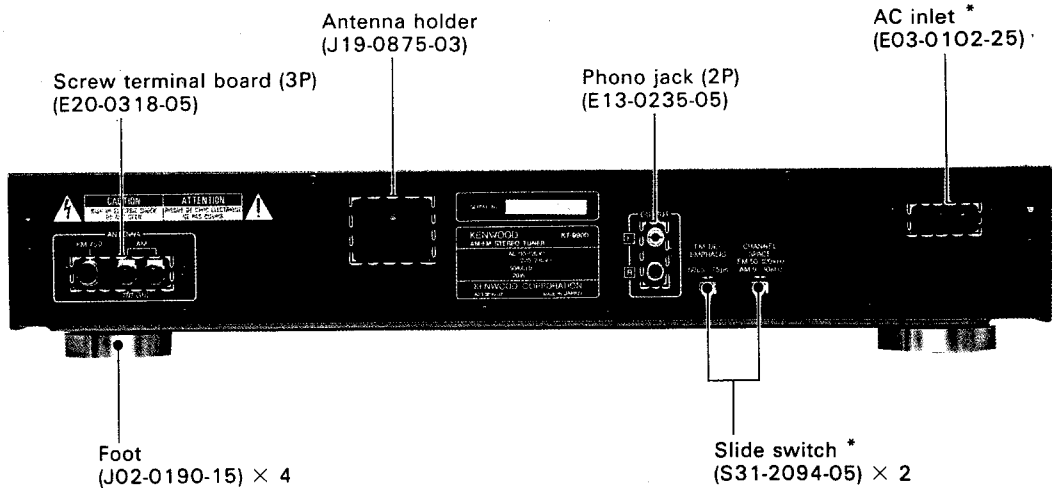

* Refer to parts list on page 42.

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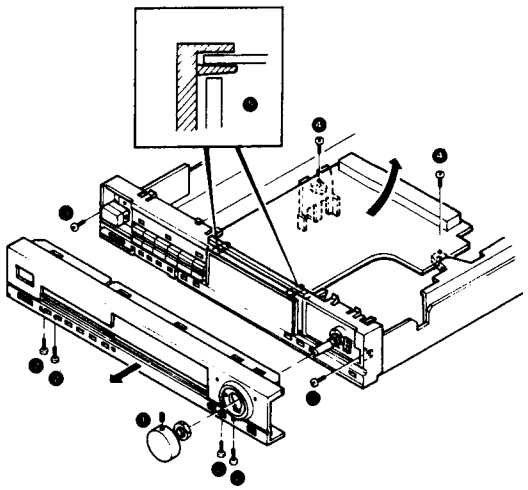
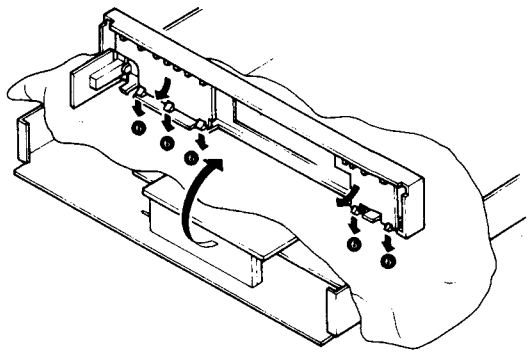
DISASSEMBLY FOR REPAIR

(Remove the metallic cabinet before proceeding to the following.)

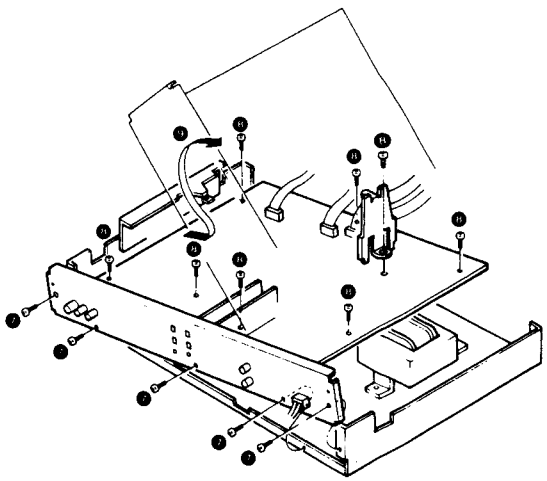
1. Loosen the screw on the tuning control knob, and take out the knob. Then, remove the hex nut attached to the tuning shaft (❶).
2. Remove the 4 screws fixing the front panel to the sub-panel from the bottom side (❷), disengage the 4 lugs on the top side, and take out the front panel in the direction of the arrow.
3. Remove the 2 screws fixing the sub-panel to the chassis (❸).
4. Remove the 2 screws fixing the Sub-Circuit Unit (X13-5750-11) (A/4) to the metal fixture (❹), and take out the Sub-Circuit Unit in the direction of the arrow.
5. When attaching the Sub-Circuit Unit (X13-) (A/4), take care to insert the PC board between the lugs on the sub-panel (❺).



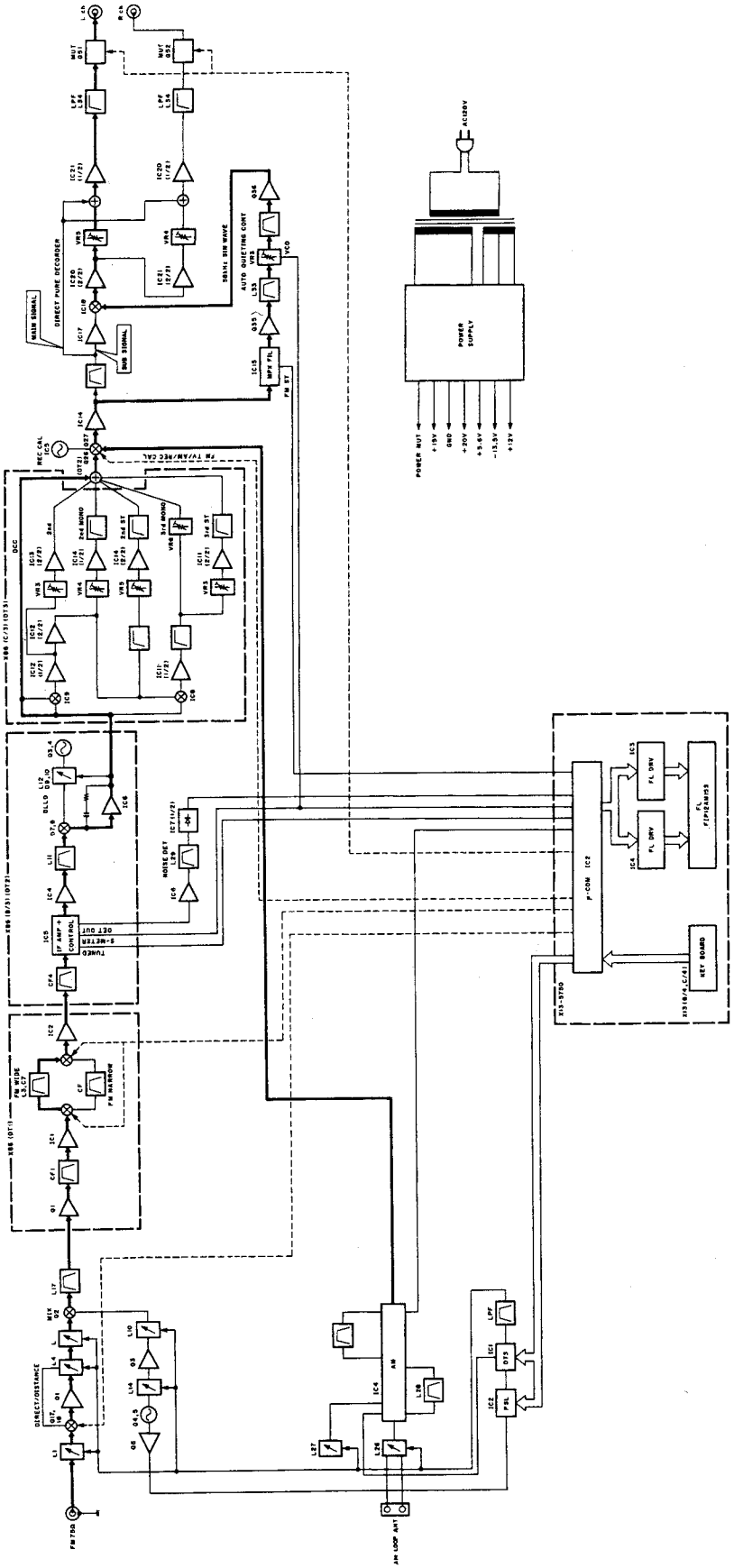
6. Place a cloth on the set main body, place the sub-panel on the cloth as shown in the illustration, disengage the lugs fixing the Sub-Circuit Units (X13-) (B/4) and (C/4) to the sub-panel (❻), and take out the PC boards in the direction of the arrow.



7. Remove the 5 screws fixing the rear panel to the chassis (❼).
8. Remove the 8 screws fixing the Tuner Unit (X05-3420-11) to the chassis (❽).
9. Take out the Tuner Unit (X05-) in the direction of the arrow (❾). Be careful not to hit the metal fixture (No. 718 in the exploded view diagram) at this time.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

Function of components

Tuner unit (X05-3420-11)

Components	Use/Function	Operation/Condition/Interchangeability
Q1	FM IF amplifier	
Q2	Mixer	
Q3	FM OSC (TUNED) buffer	
Q4,5	FM OSC	
Q6	OSC buffer	For PS.
Q8	Regulator (control)	12V power supply for FM/TV circuitry.
Q9	Regulator (error amplifier)	
Q10	AM power switch	Power switch for AM circuitry.
Q11	FM/AM power control	When the base is "H" (set by 5V from the microprocessor), Q10 is turned ON setting the AM mode.
Q12~14	PLL loop filter	
Q15,16	DIS/DIR switching	Goes ON when the input is "H". Turns Q17 and Q18 ON.
Q17,18	DIS/DIR switching	Driver. Q17 is ON for DIS and Q18 is ON for DIR.
Q19~21	WIDE/NARROW switching	When the input to Q19 is "H", Q20 is turned ON (Wide).
Q22	STOP control	When the output from IC8 (2/2) is "L", Q22 is turned ON and the STOP signal goes "L".
Q23	STOP SENSE switching	SENSE is High when the input is "H".
Q24,25	REC CAL control	REC CAL is set when the input to Q24 is "H".
Q26	AM switching	Switches the AM signal.
Q27	REC CAL switching	Switches REC CAL.
Q28	Forced Mono control	Forced Mono mode is set when the input is "H".
Q34	Auto quieting control	Automatically controls the SUB demodulation level during the small antenna input operation.
Q35	38kHz sine wave generator amplifier	Using the tuning circuit (38kHz) of LC as the load, turns the rectangular wave into a sine wave.
Q36	38kHz buffer amplifier	Sends the 38kHz signal from the tank circuit to the SUB demodulator at a low impedance.
Q37	Current mirror constant-current circuit	Used as the load resistance to IC18.
Q38		Performs current regulating operation together with Q37.
Q39		Used as the load resistance to IC18.
Q40		Performs current regulating operation together with Q39.
Q41,42		Constant-current load (GND side).
Q43	Gain switching	Goes ON in Narrow mode to control the separation (Narrow).
Q44	SUB signal demodulation switching	OFF in Stereo mode, ON is Mono mode.
Q51,52	OUTPUT muting	Used for muting the output signal.
Q53,54	Muting control	Muting is activated when the base of Q54 is "L".
Q55	Regulator	Main 15V output.
Q56,57	Regulator	−13V output.
Q58,59	Regulator	For +28V Tr.
Q60	Regulator	For +5V PLL, prescaler IC.
Q61	Regulator	−17.5V for FL.

Tuner unit (X05-3420-11)

Components	Use/Function	Operation/Condition/Interchangeability
IC1 (LM7001)	PLL IC	Reference frequencies FM: 25kHz/50kHz, AM: 9kHz/10kHz.
IC4 (LA1245)	AM system	
IC5 (M5218P)	REC CAL	Generates REC CAL signal (400Hz).
IC6 (BA401)	Noise amplifier	120kHz noise tuning amplifier.
IC7 (M5218P) 1/2 2/2	Noise OUT DIS/DIR. OUT	Noise present/absent output. 5V output when present. 5V output when ANT input is 70 dBμ.
IC8 (M5218P) 1/2 2/2	STOP detect OUT STOP detect	Outputs the STOP signal. Detects the TUNED bandwidth in FM mode.
IC9 (M5218P)	T meter control	Controls the lighting of the T meter (red portions on the left and right).
IC14 (NJM4560D)	Notch filter	114kHz.
IC15 (LA3350S)	38kHz generator (sine wave)	Auto quieting control, beacon control.
IC16 (μPC78L12J)	3-terminal regulator	IN: +15V, OUT: +12V.
IC17 (NJM4560D)	MAIN signal buffer	
IC18 (MC1495L)	SUB signal demodulator	Linear multiplier.
IC19 (M5218P)	Subcarrier buffer	38kHz.
IC20 (NJM4560D) 1/2 2/2	Stereo demodulator, deemphasis SUB signal demodulator	Adds the MAIN and SUB signals. Current/voltage converter.
IC21 (NJM4560D) 1/2 2/2	Stereo demodulator, deemphasis SUB signal demodulator	Adds the MAIN and SUB signals. Current/voltage converter.
IC22 (M5231TL)	Regulator	V_{REF}=1.8V, for +15V.
IC23 (μPC7805HF)	3-terminal regulator	5V (output 5.6V).

IF-DET UNIT (X86-1020-02)

Components	Use/Function	Operation/Condition/Interchangeability
Q1	IF amplifier	
Q3,4	PLL DET VCO	10.7MHz.
Q5	FM signal switching	Switches over between REC CAL, AM, etc.
Q6	Gain control	Turns ON to rise the gain when in the NARROW mode.
Q7	DCC ON-OFF switching	Corrects distortion based on the auto stop signal input.
IC2,3 (BA401)	IF amplifier	
IC4 (μPC1163HA)	IF amplifier	
IC5 (LA1231NS)	IF system	IF amplifier, band muting signal generator, S meter, quadrature detector.
IC6 (NJM4560D) 1/2 2/2	PLL DET DC amplifier FM/AM signal amplifier	

IF/DET unit (X86-1020-02)

Components	Use/Function	Operation/Condition/Interchangeability
IC8 (NJM4200D)	Tertiary distortion generator	Linear multiplier.
IC9 (NJM4200D)	Secondary distortion generator	Linear multiplier.
IC11 (M5218P) 1/2	Tertiary current/voltage converter	
2/2	Distortion phase correction amplifier	Tertiary distortion is Stereo mode.
IC12 (M5218P) 1/2	Secondary distortion current/voltage converter	
2/2	Distortion output correction amplifier	Increases distortion in NARROW mode.
IC13 (M5218P) 1/2	Reference voltage generator	VCC/2=7.5V.
2/2	DET distortion correction amplifier	Corrects the distortion in PLL DET.
IC14 (M5218P) 1/2	Mono distortion correction amplifier	Used for correcting the secondary distortion.
2/2	Stereo distortion correction amplifier	Used for correcting the tertiary distortion.

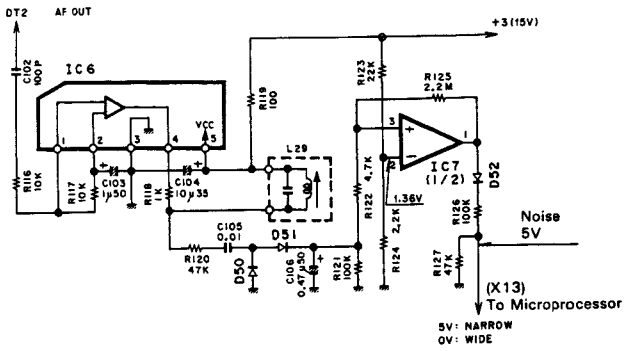
Sub-circuit unit (X13-5750-11)

Components	Use/Function	Operation/Condition/Interchangeability
IC1 (μPD4069UBC)	Waveform shaper	The Schmitt circuit shapes the waveforms of the CE, UP and DOWN pulses.
IC2 (CXP5016-216S)	Microprocessor	
IC3,4 (LC7570)	FL driver	
IC5 (M5218P)	S meter temperature compensator	Corrects the S meter lighting point error due to temperature.
Q1	RESET control	When turned ON, activates RESET.
Q2	CE control	When turned OFF, 5V is applied to CE.
Q3	M type frequency span switching	When ON, the step is set to 50kHz with FM and 9kHz with AM.
Q4	DOWN LED control	When ON, the DOWN LED is illuminated.
Q5	UP LED control	When ON, the UP LED is illuminated.
Q6	S meter center grid control	When ON, 5V is applied to the S meter center grid.
Q7	T meter right grid control	When ON, 5V is applied to the T meter right side grid.
Q8	T meter left grid control	When ON, 5V is applied to the T meter left side grid.
Q9	Q6 control	When ON, controls Q6.
Q10	TS meter, ST, BIL, 1st/2nd/6th grid and permanent ON control	When ON, 5V is applied to the emitters of Q6, Q7, Q8, Q16 and Q17, to grids Nos. 1, 2 and 6, and to permanent ON.
Q11	Q10 control	When ON, controls Q10.
Q12	SENS LEVEL LED control	When ON, the HIGH LED is illuminated.
Q13	ACTIVE RECEPTION LED control	When ON, the ACTIVE RECEPTION LED is illuminated.
Q16	STEREO indicator control	When ON, the STEREO indicator is illuminated.

Noise detector and electric field strength detector circuits

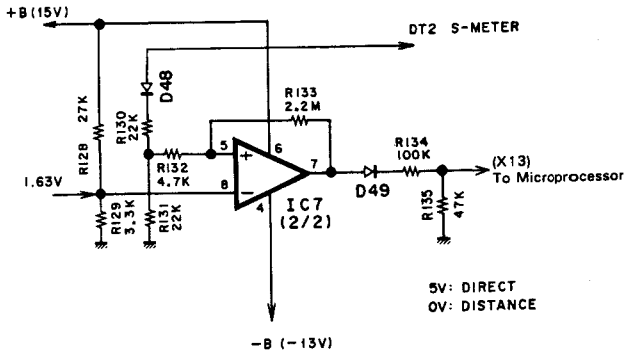
1. Noise detector

This circuits detects the presence/absence of interference from adjacent stations, etc., and applies the microprocessor with the Noise present (5V) or absent (0V) signal. The detection output is extracted from AF OUT of IC5 (LA1231N) in the daughter (2), and only the noise component is amplified by 120kHz (center frequency) tuning amp IC6 (BA401). The output is regulated by D50 and D51, and the comparator in IC7 outputs "H" = 14V ("L": −12V) when the noise DC voltage attains about 1.4V. This output is 5V/0V converted by D52, R127 and R128, and applied to the microprocessor port.

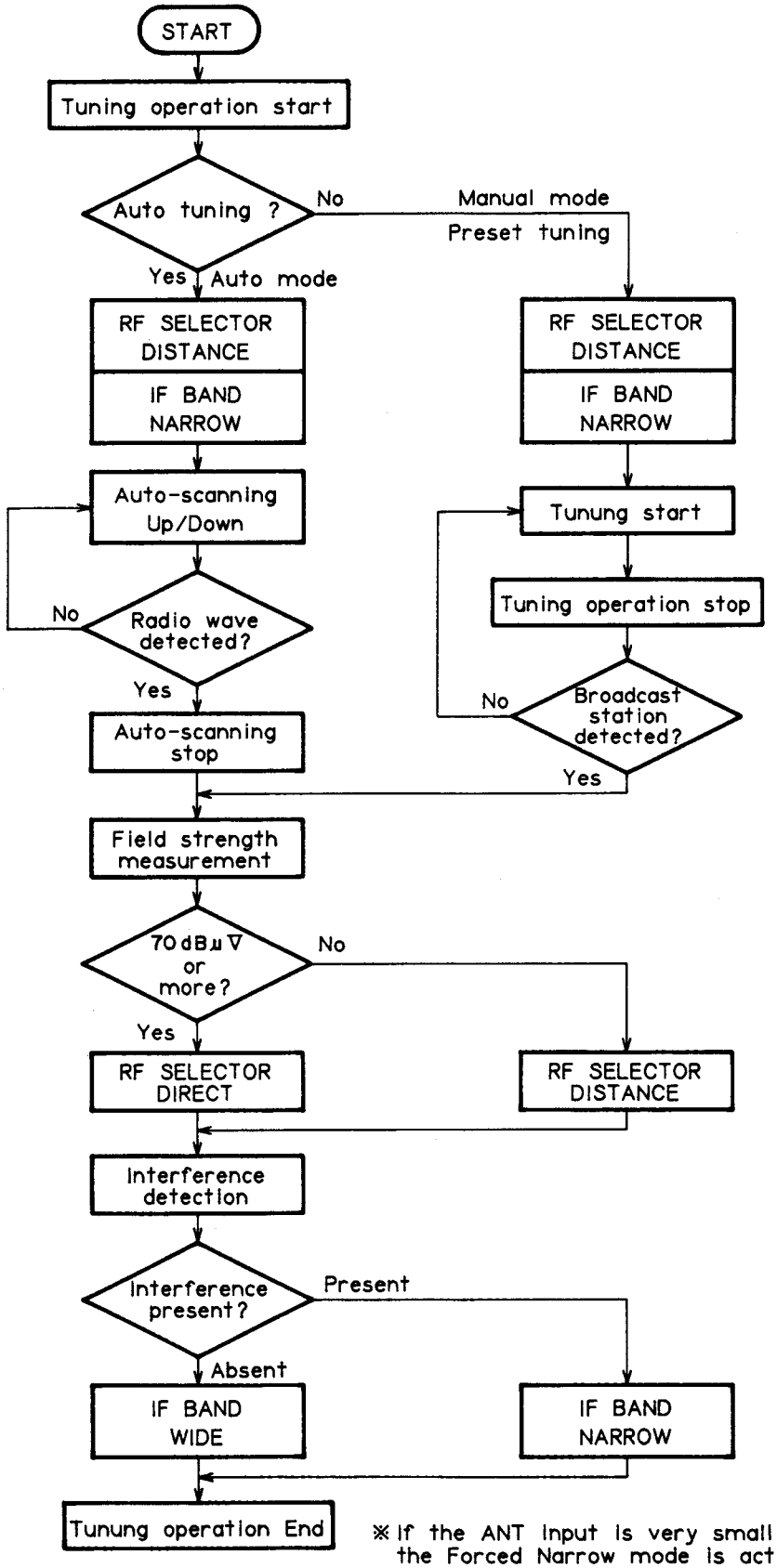


2. Field strength detector

The S meter voltage from IC5 (LA1231N) in DT2 is detected and, when the field strength exceeds 70 dB with respect to the ANT input voltage, the IC7 output goes "H" = 14V. This is 5V/0V converter and supplied to the microprocessor.



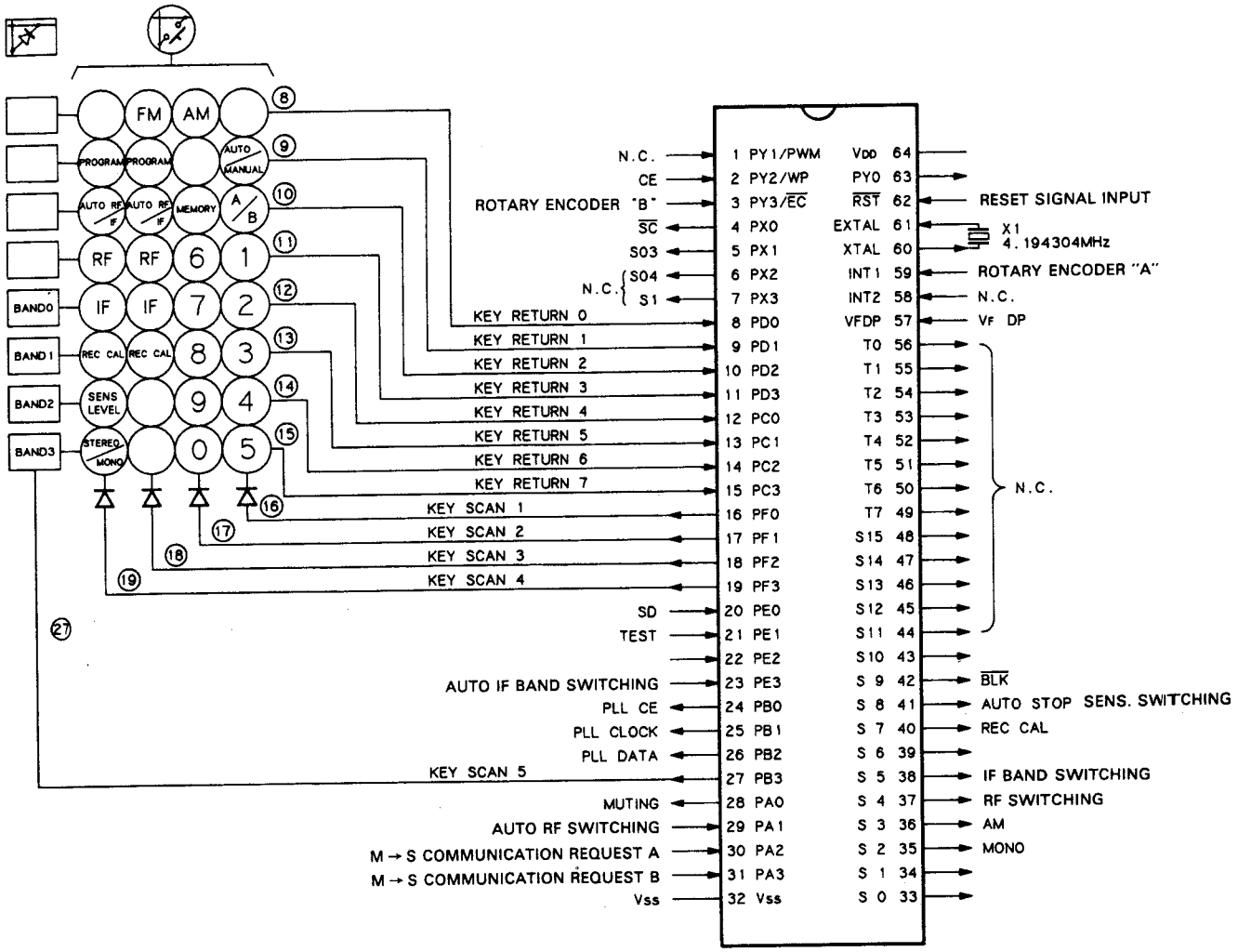
Active Reception Circuit



※ If the ANT input is very small (less than 10dBF) the Forced Narrow mode is activated regardless of the presence or absence of interference.

IC2: CXP5016-216S(X13-5750-11)
Microprocessor IC

Terminal connection diagram & keymatrix connection



Functions of diodes and switches

Destination Type	Band Set Switches B3 B2 B1 B0	Band	Receiving Frequency Range	Inter-Channel Space	Intermediate Frequency	PLL IC1(LM7001) PLL Reference Frequency	PLL Input Terminal	PLL Output B01 (P7)	B02 (P8)	B03 (P9)	Auto Tuning
K	1 0 0 0	FM	87.5MHz~108.0MHz	100kHz	+10.7MHz	50kHz	FMIN	L	L	H	O
		AM	530kHz~1610kHz	10kHz	+450kHz	10kHz	AMIN	※			O
E	1 1 1 1	FM	87.5MHz~108.0MHz	50kHz	+10.7MHz	50kHz	FMIN	L	L	H	O
		AM	531kHz~1602kHz	9kHz	+450kHz	9kHz	AMIN	*	※		O

O: Without diode 1: With diode

*: AM is controlled by the microprocessor IC (IC2) in the (X13-) unit.

Port allocation

Terminal No.	Symbol	I/O	H/L	Name	Function
1	PY1	O	H	N.C.	On the PC board, shall be ready for being pulled up with a resistor.
2	PY2	I	H	C.E.	Backup (AC OFF) detection terminal. H: AC ON, L: AC OFF. When the "L" level is detected, the backup status is set and clock is stopped. (Note) The rise from "L" to "H" shall be faster than the rise of the reset signal.
3	PY3	I	H	ROTARY ENCODER "B"	Rotary encoder output signal input. H: ON, L: OFF.
4	PX0	O	H	SC	Serial shift clock output. H: Normal.
5	PX1	O	H	SOB	Serial display data output.
6	PX2	O	–	SOA	N.C.
7	PX3	O	–	SI	
8~15	PD0~PD3	I	H	KEY RETURN 0~7	Key return inputs. H: Input present, L: Input absent. All terminals are pulled down (by 10K to 100K).
16~19	PF0~PF3	O	H	KEY SCAN 1~4	Key scanning signals.
20	PE0	I	H	SD	Auto-tuning stop display input. H: TUNE, L: SIGNAL.
21	PE1	I	L	TEST	Test mode setting input. H: Normal, L: Test. Normally pulled up. When testing is required, the TEST terminal is connected to GND.
22	PE2				NC
23	PE3	I	H/L	AUTO IF BAND	IF band switch input signal for AUTO RF/IF switching mode. H: Narrow, L: Wide.
24	PB0	O	H	PLL C.E.	Chip Enable output for PLL IC. Connected to pin 3 CL of LM7001.
25	PB1	O	H	PLL CLOCK	Clock output for PLL IC. Connected to pin 4 CL of LM7001.
26	PB2	O	H	PLL DATA	Data output for PLL IC. Connected to pin 5 DATA of LM7001.
27	PB3	O	H	KEY SCAN5	Key scanning signal.
28	PA0	O	L	MUTING	Muting control terminal. H: Muting ON, L: Muting OFF. Conditions for Muting ON: 1) when Power is turned ON/OFF, 2) when the band is switched, 3) during recalling a preset CH, 4) during manual tuning, 5) during auto tuning, 6) during IF band switching, 7) during RF switching 8) during REC CAL ON/OFF switching.
29	PA1	I	H/L	AUTO RF switching	RF switching signal input in AUTO RF/IF switching mode. H: Direct, L: Distance.
30	PA2	O	H	M→S communication request	Data transfer request signal output for M → S display. H: Communication request, L: Normal.
31	PA3				
32	Vss	–	–	Vss	
33	S0	–			NC
34	S1	–			NC
35	S2	O	H/L	MONO/ST	FM Mono/Stereo reception control output. H: Mono, L: Streo.
36	S3	O	H	AM	AM pack power control output. H: Power ON, L: Power OFF.
37	S4	O	H	RF SELECTOR	RF switching signal output. H: Distance, L: Direct. Fixed at Distance (H) in other reception modes than FM.

Terminal No.	Symbol	I/O	H/L	Name	Function
38	S5	O	H/L	FM IF BAND	IF band switching signal output. H: Wide, L: Narrow. Fixed at Wide in other reception modes than FM.
39	S6		——	——	NC
40	S7	O	H	REC CAL	REC CAL reference signal transmission request signal output. H: REC CAL reference signal transmission request, L: Normal.
41	S8	O	H/L	AUTO STOP SENS. LEVEL	Auto tuning stop sensitivity switching signal output. H: High, L: Low.
42	S9	O	H	$\overline{BLK}$	Control signal output of pin 6 $\overline{BLK}$ of FL driver IC (LC7570). H: FL display ON, L: FL display OFF.
43~56	S10~S15 T7~T0	O	H		N.C. Only pin 56 shall be set ready for being pulled up.
57	V_{FPD}	—	—		FL -B power supply connection.
58	INT_2	I	H		N.C.
59	INT_1	I	H	ROTARY ENCODER "A"	Rotary encoder output signal input. H: ON, L: OFF.
60	XTAL	—	—	CL1	Clock oscillation terminals. X'tal: 4.194304 MHz.
61	EXTAL	—	—	CL2	
62	$\overline{RST}$	I	L	RESET	Reset signal input. H: Normal, L: Reset.
63	PYO	O	—		N.C. On the PC board, shall be set ready for being pulled up.
64	V_{DD}	—	—	V_{DD}	+B terminal (5V).

Preset channel memory

- When the MEMORY key is held depressed for more than 0.2 second then the key is released, preset channel display "—" blinks for about 5 seconds. In this period, select A/B and press a numeric key (1 to 0); the preset channel memory is stored and the stored channel is displayed.
- When the MEMORY key is pressed again while "—" is blinking, the display remains the same, but the unit gets ready for another preset channel memory for another 5 seconds. If nothing is does after the key has been pressed, the preset channel memory becomes impossible in about 5 seconds; the preset channel display returns to the last channel display, and the MEMORY indicator goes off.
- When an operation which is accompanied by muting is activated while "—" is blinking, the preset channel memory mode is canceled immediately. This occurs when one of the RF, IF, AUTO TUNING SYSTEM, REC CAL, FM and AM keys is pressed or when the rotary encoder is rotated. However, if the blinking of "—" was started during the AUTO TUNING SYSTEM operation, the preset channel memory mode is not canceled even when the AUTO TUNING SYSTEM key is pressed.
- The MEMORY key is not accepted while the muting timer is activated.
- The MEMORY indicator lights while the key is pressed. When the key is held depressed for more than 0.2 second, the indicator continues to light even after the key has been released and, at this time, "—" on the preset channel display starts blinking.

Programming feature

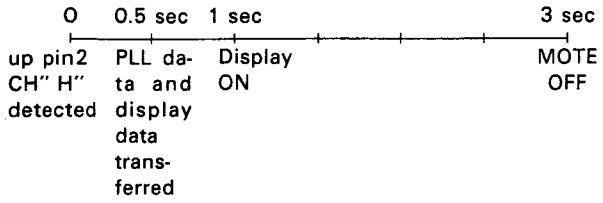
- Last Ch → Last Ch band — A: Ch0 of A → Ch0 of B
  B: Ch0 of B → Ch0 of A

REC CAL

- During REC CAL operation, keys other than the REC CAL key are not accepted.
- The REC CAL operation is canceled by turning power OFF (when the microprocessor is reset).
- The preset channel memory mode is canceled when the REC CAL key is pressed.
- When the REC CAL key is pressed during frequency scanning in the Auto Tuning mode, the frequency scanning pauses temporarily. The frequency scanning resumes when the REC CAL mode is canceled by pressing the REC CAL key again.
- When the REC CAL key is pressed during the AUTO TUNING SYSTEM operation, the AUTO TUNING SYSTEM operation will be carried out until the end.

Keys valid only with FM band:
AUTO TUNING SYSTEM, RF, IF

Display and muting OFF timing at power ON (Resetting)



Countermeasure against overrun

- Turn power ON with the FM, RF and REC CAL keys held depressed simultaneously. The microprocessor will be initialized and data including backup data is cleared.

Other

- Band preset scanning is possible in Test mode; when the key for the same band is pressed successively, the preset memory channels for the band are received in sequence.

Initial setup condition

Band: FM
Frequency: 87.50MHz
Tuning mode: Auto
RF: Distance
IF: Wide
Channel mode: A
ST/MONO: Stereo
Preset channel:

SENS LEVEL: "H" (all types).
REC CAL: OFF
PROGRAM: OFF
AUTO TUNING SYSTEM: OFF
Preset channel memory: FM 87.50 MHz for all of CH1 to CH0.

AM initial setup condition

Frequency: 530 (531 kHz E-TYPE) kHz
RF: Direct. However, all indicators including RF SEL are OFF.
IF: Wide. However, all indicators including IF BAND are OFF.
Channel mode: A
ST/MONO: Mono regardless of tuning mode
Preset channel:

SENS LEVEL: "H" (all types).
REC CAL, PROGRAM, AUTO TUNING SYSTEM: OFF

Output Port Logic in Different Modes

MODE \ Output Part Pin No.		MONAURAL ㉟	AM POWER ㊱	RF ㊲	IF ㊳	TV f-RESP ㊴	SENSE ㊵
At initial resetting (when backup is NG) (FM Mode)		L	L	H	H	H	H
FM	AUTO	H/L	L	H/L	H/L	H	H/L
	MANUAL	H/L	L	H/L	H/L	H	H/L
AM		H	H	L	H	H	H/L
		H: MONAURAL L: STEREO	H: AM POWER ON L: AM POWER OFF	H: DISTANCE L: DIRECT	H: WIDE L: NARROW	H: NORMAL L: HI FI (LED is illuminated.)	H: SENSE H (LED is illuminated.) L: SENSE L

Auto tuning system (ATS)

- The ATS operation mode can be turned ON/OFF only during FM band reception.
- When the RF or IF key is pressed during FM band reception, the ATS mode is canceled immediately. If the ATS operation has been activated, it is also aborted at this time.
- As the final ATS operation mode is stored in memory, the ATS operation is started if the final mode was the ATS mode when the microprocessor is reset, power is turned ON, or when any of the FM band key, numeric keys or A/B key is pressed during receiving a band other than FM.
- When the rotary encoder is rotated in the ATS mode or when the ATS key is pressed during tuning (frequency scanning) operation, RF is set to the Distance and IF to Narrow.
  However, if SD (microprocessor pin 20) "H" is not detected as the result of frequency scanning, the RF and IF mode will not change even after the end of frequency scanning.
- Even when the reception status changes after the ATS operation has ended, the ATS operation will not resume.

Test Frequencies that are stored in memory channels in test mode

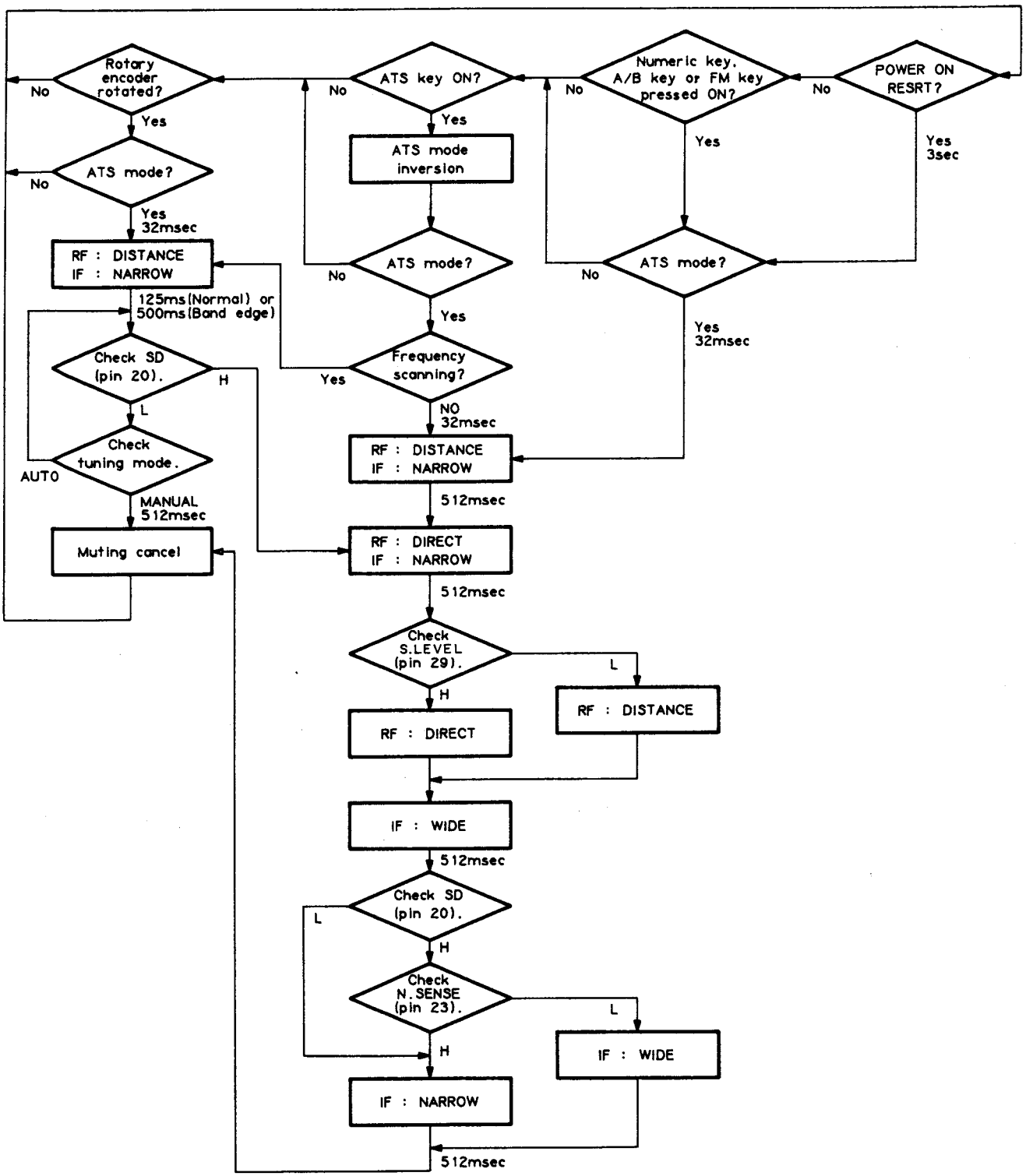
- Band preset scanning is possible only in Test mode.

CHANNEL \ TYPE	K	E
A-1	FM 87.5MHz	FM 87.5MHz
A-2	89.1MHz	89.1 MHz
A-3	98.0MHz	98.0 MHz
A-4	106.0MHz	106.0 MHz
A-5	108.0MHz	108.0 MHz
A-6	87.5MHz	87.5 MHz
A-7	87.5MHz	87.5 MHz
A-8	87.5MHz	87.5 MHz
A-9	87.5MHz	87.5 MHz
A-0	87.5MHz	87.5 MHz
B-1	AM 530 kHz	AM 531 kHz
B-2	630 kHz	630 kHz
B-3	990 kHz	990 kHz
B-4	1440 kHz	1440 kHz
B-5	1610 kHz	1602 kHz
B-6	FM 87.5MHz	FM 87.5MHz
B-7	87.5MHz	87.5 MHz
B-8	87.5MHz	87.5 MHz
B-9	87.5MHz	87.5 MHz
B-0	87.5MHz	87.5 MHz

Note) The Test mode is entered by turning power ON with the TEST terminal set to 0V (GND). As the band preset scanning is activated in Test mode, these frequencies can be received in sequence without pressing the memory channel keys, but by just pressing one of the band swiches (FM /AM).

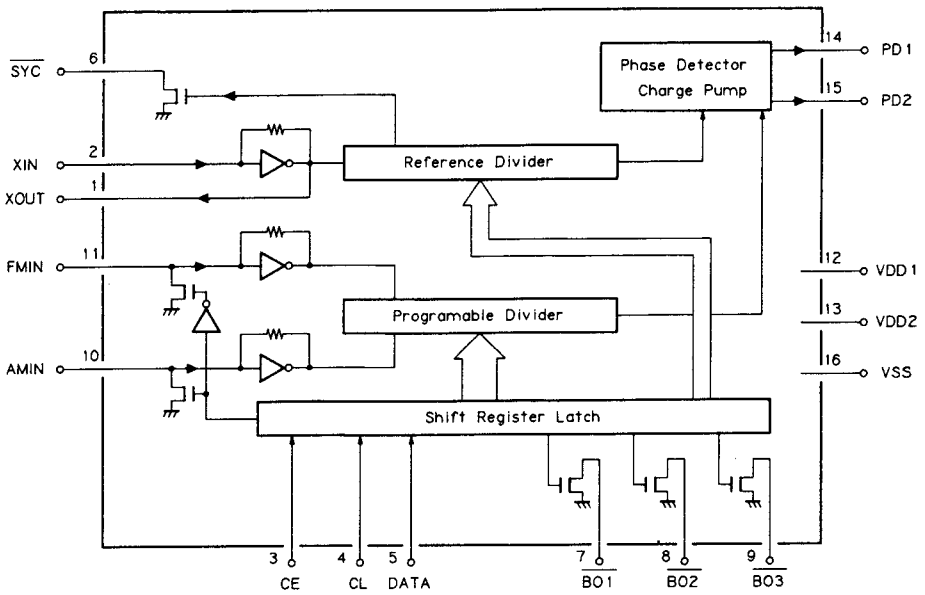
KT-990D

Auto tuning system operation flowchart



IC1: LM7001(X05-3420-11)
PLL frequency synthesizer

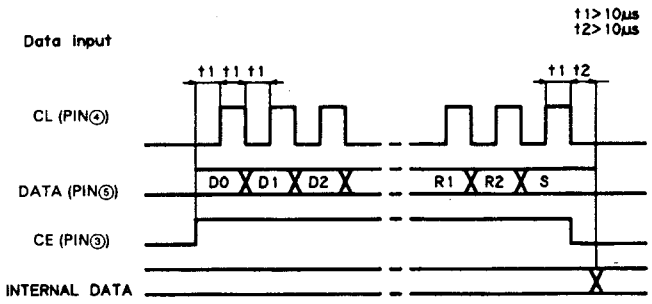
Block diagram



Terminal description

Pin no.	Pin name	I/O	Function
1	XOUT	O	Crystal oscillator (7.2 MHz).
2	XIN	I	
3	CE	I	Data input.
4	CL	I	
5	DATA	I	
6	$\overline{SYC}$	I/O	Clock for controller (400 kHz).
7	$\overline{BO1}$	O	Band data output. $\overline{BO1}$ can be used as a time base output (8 Hz)
8	$\overline{BO2}$	O	
9	$\overline{BO3}$	O	
10	AMIN	I	Local oscillator signal input.
11	FMIN	I	
12	VDD1		Power supply. VDD2 for back-up.
13	VDD2		
14	PDD1	O	Charge pump output.
15	PD2	O	
16	VSS		Power supply.

Data input

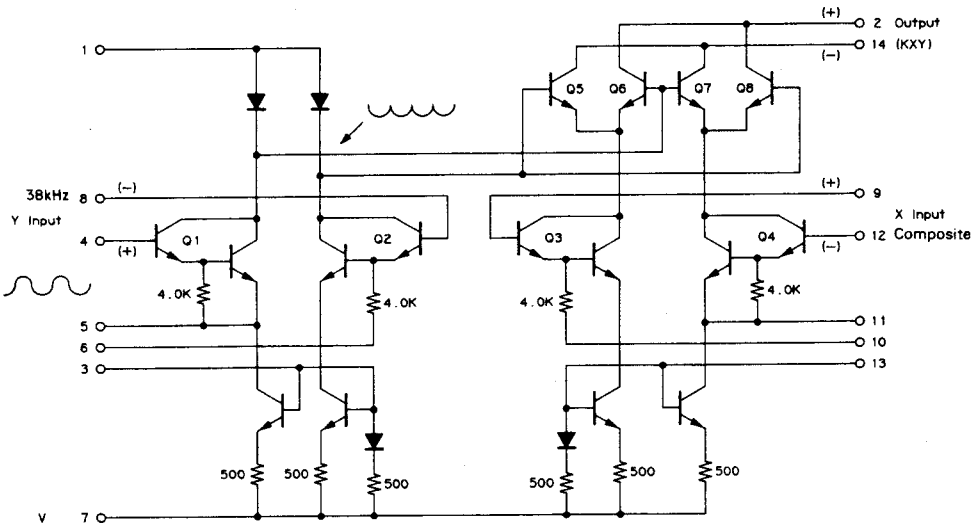


IC18: MC1495L (X05-3420-11)
MPX SUB demodulator

MPX SUB Decoder (IC18: MC1495L)

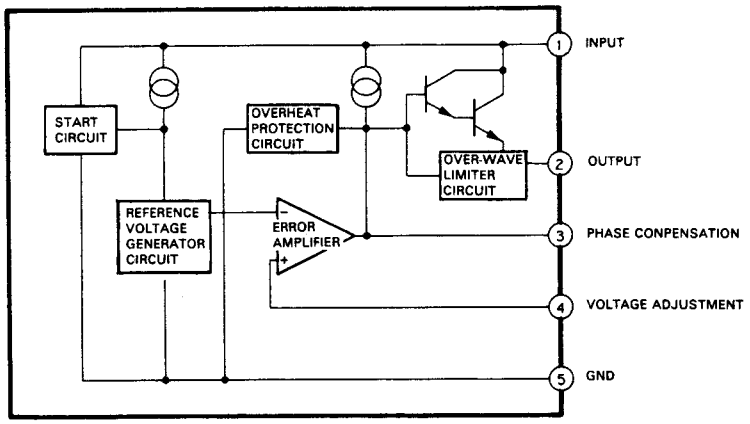
The Direct Pure MPX enables stereo decoding without causing beat interference, in theory, by linear-multiplying two analog signals (stereo composite signal and 38 kHz sine wave sub carrier signal).
This unit provides the linear multiplier with high S/N ratio, which is designed with the new theory, so that the high signal-to-noise rationof 94 dB for the MPX unit itself and the resistance to overmodulation of 400% (dynamic range: 106 dB are realized while the conventinal characteristics are maintained.

Internal equivalent circuit



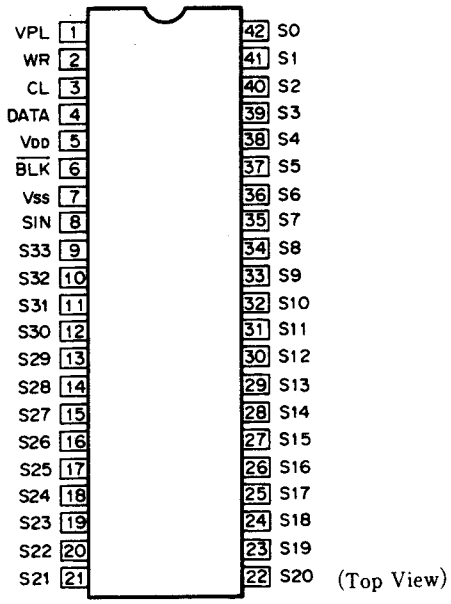
IC22: M5231TL (X05-3420-11)
Constant voltage power supply

Block diagram



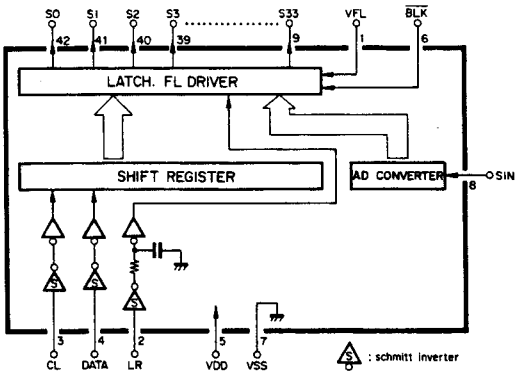
IC3, 4: LC7570(X13-5750-11)
FL driver IC

Pin configuration



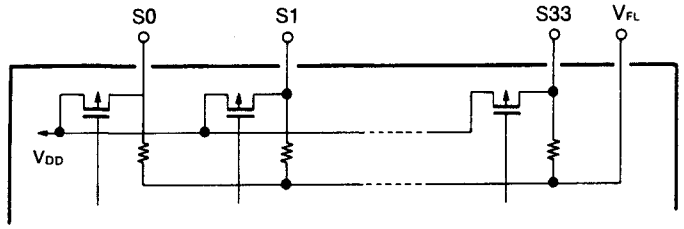
(Top View)

Equivalent block diagram



Explanation of terminals

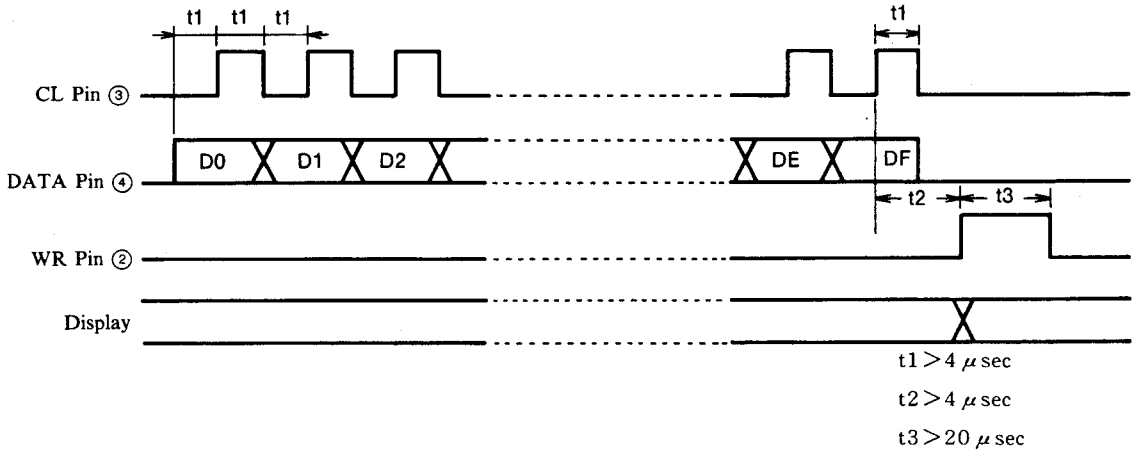
S0~S33, V_{FL}: Segment outputs, pull-down resistor common terminal.



SIN: AD converter input.
1st point lighting level: 0.1 V_{DD} (typical)
2nd point lighting level: 0.2 V_{DD} (typical)
3rd point lighting level: 0.3 V_{DD} (typical)
4th point lighting level: 0.4 V_{DD} (typical)
5th point lighting level: 0.5 V_{DD} (typical)

$\overline{BLK}$: Display OFF input.
$\overline{BLK}$="0" (V_{SS})..... OFF
$\overline{BLK}$="1" (V_{DD}).....ON
CL, DATA, WR : Data inputs
V_{DD}, V_{SS} : Power supply terminals

Data input



t1 > 4 μsec
t2 > 4 μsec
t3 > 20 μsec

Input at D0

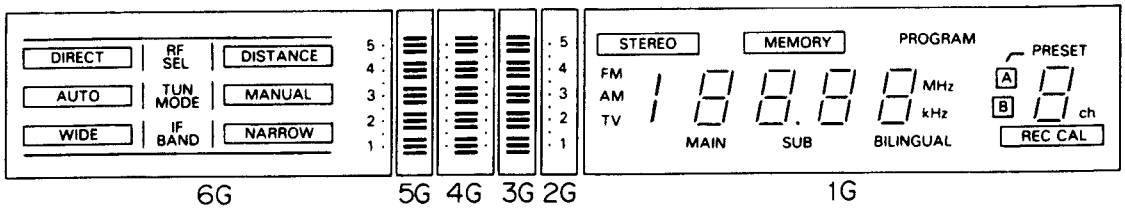
D0	D1	D2	D3	D4	D5	D6	DA	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20	DC	D21	D22	D23	D24	D25	D26	D27	DD	D28	D29	D30	D31	D32	D33	DE	DF

D0~D33 : Display data
DA~DE : Dummy bit (don't care)
DF : S29~S33 switching

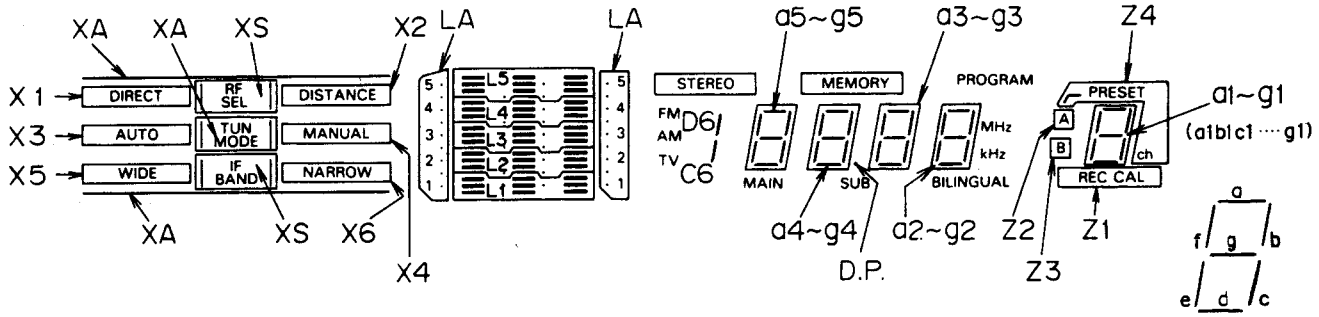
Dn="1" : Sn="1" (=V_{DD})
Dn="0" : Sn="0" (=V_{FL})
D_F ="0" : D29~D33 → S29~S33
D_F ="1" : AD1 → S33
AD2 → S32
AD3 → S31
AD4 → S30
AD5 → S29

FL1: FIP12AM15S (X13-5750-11)
Fluorescent indicator tube

Grid division



Anode Internal connection



Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Electrode	F	F	P_{X2}	P_{X4}	NC	P_{X6}	P_{X5}	P_{X3}	P_{X1}	P_{XA}	P_{XS}	P_{LA}	P_{L1}	P_{L2}	P_{L3}	NC	P_{L4}	P_{L5}	NC	P_{MAIN}
Pin No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Electrode	P_{SUB}	NC	P_{Z2}	P_{Z3}	P_{Z1}	P_{Z4}	P_{TV}	6G	P_{kHz}^{AM}	5G	$P_{D.P.MHz}^{FM}$	P_{c6}^{b6}	P_{RAM}^{PROG}	4G	P_{ORY}^{MEM}	P_{REO}^{STE}	3G	P_{e5}	1G	P_{g5}
Pin No.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Electrode	P_{f5}	P_{a5}	NC	P_{b5}	P_{c5}	P_{d5}	P_{e4}	P_{g4}	P_{f4}	P_{a4}	P_{b4}	P_{c4}	P_{d4}	NC	P_{e3}	P_{g3}	P_{f3}	P_{a3}	P_{b3}	P_{c3}
Pin No.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	
Electrode	P_{d3}	P_{e2}	P_{g2}	NC	P_{f2}	P_{a2}	P_{b2}	P_{c2}	P_{d2}	P_{e1}	P_{g1}	P_{f1}	P_{a1}	P_{b1}	1G	P_{c1}	P_{d1}	F	F	

Notes F: Filament G : Grid P : Anode NC : No Connection

ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
FM SECTION Unless otherwise specified, the individual switches should be set as following: SELECTOR:FM IF BAND:WIDE RF SELECTOR:DISTANCE TUNING MODE:AUTO REC CAL:OFF PROGRAM:OFF							
1	BAND EDGE (1)	–	Connect a DC voltmeter between TP3(VT) and TP4(GND).	TUNING MODE: MANU 87.5MHz	L14 (X05-)	3.0V	(a)
2	BAND EDGE (2)	–	Connect a DC voltmeter between TP3(VT) and TP4(GND).	TUNING MODE: MANU 108.0MHz	TC1 (X05-)	25.0V	(a)
Repeat alignments 1 and 2 several times.							
3	DISCRIMINATOR	(A) 98.0MHz 0 dev 100dBμ(ANT input)	Connect a DC voltmeter between TP5(AFC)and TP6(VREF).	98.0MHz	L9 (X86-)	0.000V±10mV	(b)
4	PLL DETECTOR	(A) 98.0MHz 0 dev 100dBμ(ANT input)	Connect a DC voltmeter between TP7(VCC/2) and TP8(DET).	98.0MHz	L12 (X86-)	0.000V±20mV	(c)
5	MPX VCO	(A) 98.0MHz 0 dev 100dBμ(ANT input)	Connect a frequency counter between TP19(GND) and TP20(VCO).	98.0MHz	VR3 (X05-)	19.000kHz±10Hz	(d)
6	RF ALIGNMENT	(A) 98.0MHz 1kHz,±75kHz dev	(B)	98.0MHz	★ L1,4,7,10 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
★ Repeat the sequence from L1→L4→L7→L10→L1·····a few times.							
7	IFT(1)	(A) 98.0MHz 1kHz,±75kHz dev	(B)	98.0MHz	L17 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
8	IFT(2)	(A) 98.0MHz 1kHz,±75kHz dev	(B)	98.0MHz	L11 (X86-)	Maximum amplitude and symmetry of the oscilloscope display.	
9	AUTO-STOP SENSITIVITY	(A) 98.0MHz SELECTOR: MAIN 1kHz,±75kHz dev 12dBμ(ANT input)	–	98.0MHz	VR1 (X86-)	Position where the STEREO indicator lights when the control is rotated gradually clockwise from the most.	
10	DISTORTION(1) DET	(C) 98.0MHz SELECTOR: MONO 1kHz,±75kHz dev ✻ 80dBμ(ANT input)	(B)	98.0MHz	VR3 (X86-)	Minimum distortion.	
11	DISTORTION(2) MONO	(C) 98.0MHz SELECTOR: MONO 1kHz,±75kHz dev ✻ 80dBμ(ANT input)	(B)	98.0MHz	VR4 (X86-)	Minimum distortion.	
12	DISTORTION(3) MONO	(C) 98.0MHz SELECTOR: MONO 1kHz,±75kHz dev ✻ 80dBμ(ANT input)	(B)	98.0MHz	VR6 (X86-)	Minimum distortion.	
Adjust 10, 11 and 12 alternately a few times to minimize the MONO distortion. ✻ E & T types: 1kHz, ±46kHz dev.							
13	DISTORTION(4) STEREO	(C) 98.0MHz SELECTOR: SUB 1kHz,±68.25kHz dev Pilot:±6.75kHz dev 80dBμ(ANT input)	(B)	98.0MHz	VR7 (X86-)	Minimum distortion.	
14	DISTORTION(5) STEREO	(C) 98.0MHz SELECTOR: SUB 1kHz,±68.25kHz dev Pilot:±6.75kHz dev 80dBμ(ANT input)	(B)	98.0MHz	L33 (X05-)	Minimum distortion.	
After the adjustment of 14, adjust 13 again to minimize the distortion at 1kHz.							

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
15	DISTORTION(6) STEREO	(C) 98.0MHz SELECTOR: L or R 1kHz,±68.25kHz dev Pilot:±6.75kHz dev 80dBμ(ANT input)	(B)	98.0MHz	VR5 (X86-)	Minimum distortion.	
15'	DISTORTION(7) STEREO NARROW (E & T types)	(C) 98.0MHz SELECTOR: L or R 1kHz,±68.25kHz dev Pilot:±6.75kHz dev 80dBμ(ANT input)	(B)	98.0MHz IF BAND: NARROW	VR2 (X86-)	Minimum distortion.	
	Repeat the adjustments from 10 to 15 a few times to minimize the distortion.						
16	SEPARATION (1) R→L	(C) 98.0MHz SELECTOR: R 1kHz,±68.25kHz dev Pilot:±6.75kHz dev 80dBμ(ANT input)	(B)	98.0MHz	VR4 (X05-)	Minimum crosstalk.	
17	SEPARATION (2) L→R	(C) 98.0MHz SELECTOR: L 1kHz,±68.25kHz dev Pilot:±6.75kHz dev 80dBμ(ANT input)	(B)	98.0MHz	VR5 (X05-)	Minimum crosstalk.	
	Repeat the adjustments of 16 and 17 a few times so that the R-to-L and L-to-R separations are equal.						
AM SECTION	Keep the AM loop antenna installed. SELECTOR:AM TUNING MODE:AUTO REC CAL:OFF PROGRAM:OFF						
[1]	BAND EDGE (1)	–	Connect a DC voltmeter between TP3(VT) and TP4(GND).	530kHz	L27 (X05-)	1.5V	(a)
[2]	BAND EDGE (2)	–	Connect a DC voltmeter between TP3(VT) and TP4(GND).	1610kHz	TC3 (X05-)	8.0V	(a)
	Repeat alignments [1] and [2] several times.						
[3]	RF ALIGNMENT (1)	(D) ☆ 630kHz 400Hz,30% mod	(B)	630kHz	L26 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
[4]	RF ALIGNMENT (2)	(D) ☆ 1440kHz 400Hz,30% mod	(B)	1440kHz	TC2 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
	Repeat alignments [3] and [4] several times.						
[5]	IFT	(D) ☆ 999kHz 400Hz,30% mod	(B)	999kHz	◆ L28 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
	◆ L28 has been preset so the adjustment is usually not required. ☆ The peak will be easier to locate if the test loop antenna is used.						

REGLAGE

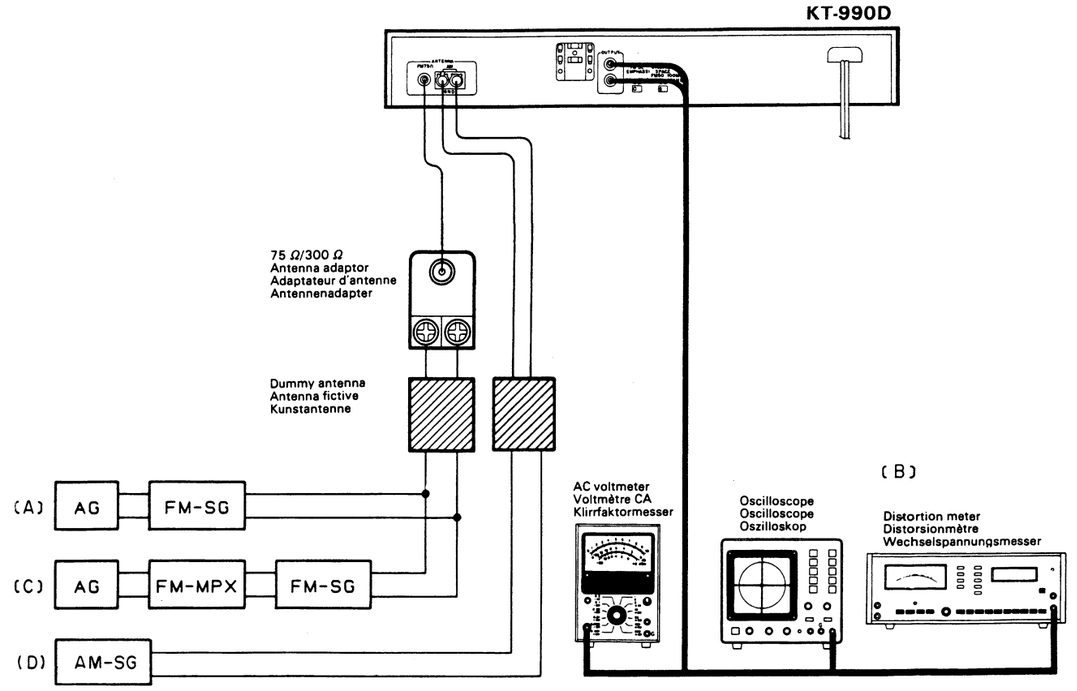
N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG
SECTION MF	Sauf en cas d'indications spéciales, régler chaque commutateur comme suit: SELECTOR:FM IF BAND:WIDE RF SELECTOR:DISTANCE TUNING MODE:AUTO REC CAL:OFF PROGRAM:OFF						
1	BORD DE BANDE (1)	–	Connecter un voltmètre CC entre les TP3(VT) et 4(GND).	TUNING MODE: MANU 87.5MHz	L14 (X05-)	3.0V	(a)
2	BORD DE BANDE (2)	–	Connecter un voltmètre CC entre les TP3(VT) et 4(GND).	TUNING MODE: MANU 108.0MHz	TC1 (X05-)	25.0V	(a)
	Répéter les points 1 et 2 plusieurs fois.						
3	DISCRIMINATEUR	(A) 98.0MHz 0dév 100dBμ (Entrée ANT)	Connecter un voltmètre CC entre les TP5(AFC) et 6(VREF).	98.0MHz	L9 (X86-)	0.000V±10mV	(b)
4	DETECTEUR PLL	(A) 98.0MHz 0dév 100dBμ (Entrée ANT)	Connecter un voltmètre CC entre les TP7(VCC/2) et 8(DET).	98.0MHz	L12 (X86-)	0.000V±20mV	(c)
5	MPX VCO	(A) 98.0MHz 0dév 100dBμ (Entrée ANT)	Connecter un compteur de fréquence entre les TP19(GND) et 20(VCO).	98.0MHz	VR3 (X05-)	19.000kHz±10Hz	(d)
6	ALIGNEMENT HT	(A) 98.0MHz 1kHz. ±75kHz dév	(B)	98.0MHz	★ L1.4.7.10 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
	★ Répéter la séquence L1→L4→L7→L10→L1····· plusieurs fois.						
7	TRANSFORMATEUR FI(1)	(A) 98.0MHz 1kHz. ±75kHz dév	(B)	98.0MHz	L17 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
8	TRANSFORMATEUR FI(2)	(A) 98.0MHz 1kHz. ±75kHz dév	(B)	98.0MHz	L11 (X86-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
9	SENSIBILITE ARRET AUTOMATIQUE	(A) 98.0MHz Sélection:MAIN 1kHz. ±75kHz dév 12dBμ (Entrée ANT)	–	98.0MHz	VR1 (X86-)	Position où l'indicateur STEREO s'allume quand la commande est tournée graduellement dans le sens des aiguilles d'une montre à partir du réglage à fond dans le sens contraire des aiguilles d'une montre.	
10	DISTORSION (1) DET	(C) 98.0MHz Sélection:MONO 1kHz. ±75kHz dév * 80dBμ (Entrée ANT)	(B)	98.0MHz	VR3 (X86-)	Distorsion minimale.	
11	DISTORSION (2) MONO	(C) 98.0MHz Sélection:MONO 1kHz. ±75kHz dév * 80dBμ (Entrée ANT)	(B)	98.0MHz	VR4 (X86-)	Distorsion minimale.	
12	DISTORSION (3) MONO	(C) 98.0MHz Sélection:MONO 1kHz. ±75kHz dév * 80dBμ (Entrée ANT)	(B)	98.0MHz	VR6 (X86-)	Distorsion minimale.	
	Ajuster 10, 11 et 12 alternativement plusieurs fois pour minimiser la distorsion MONO. * E et T type: 1kHz. ±46kHz dév.						
13	DISTORSION (4) STEREO	(C) 98.0MHz Sélection:SUB 1kHz. ±68.25kHz dév Pilote:±6.75kHz dév 80dBμ (Entrée ANT)	(B)	98.0MHz	VR7 (X86-)	Distorsion minimale.	
14	DISTORSION (5) STEREO	(C) 98.0MHz Sélection:SUB 1kHz. ±68.25kHz dév Pilote:±6.75kHz dév 80dBμ (Entrée ANT)	(B)	98.0MHz	L33 (X05-)	Distorsion minimale.	
	Après l'ajustement de 14, ajuster 13 à nouveau pour minimiser la distorsion à 1kHz.						

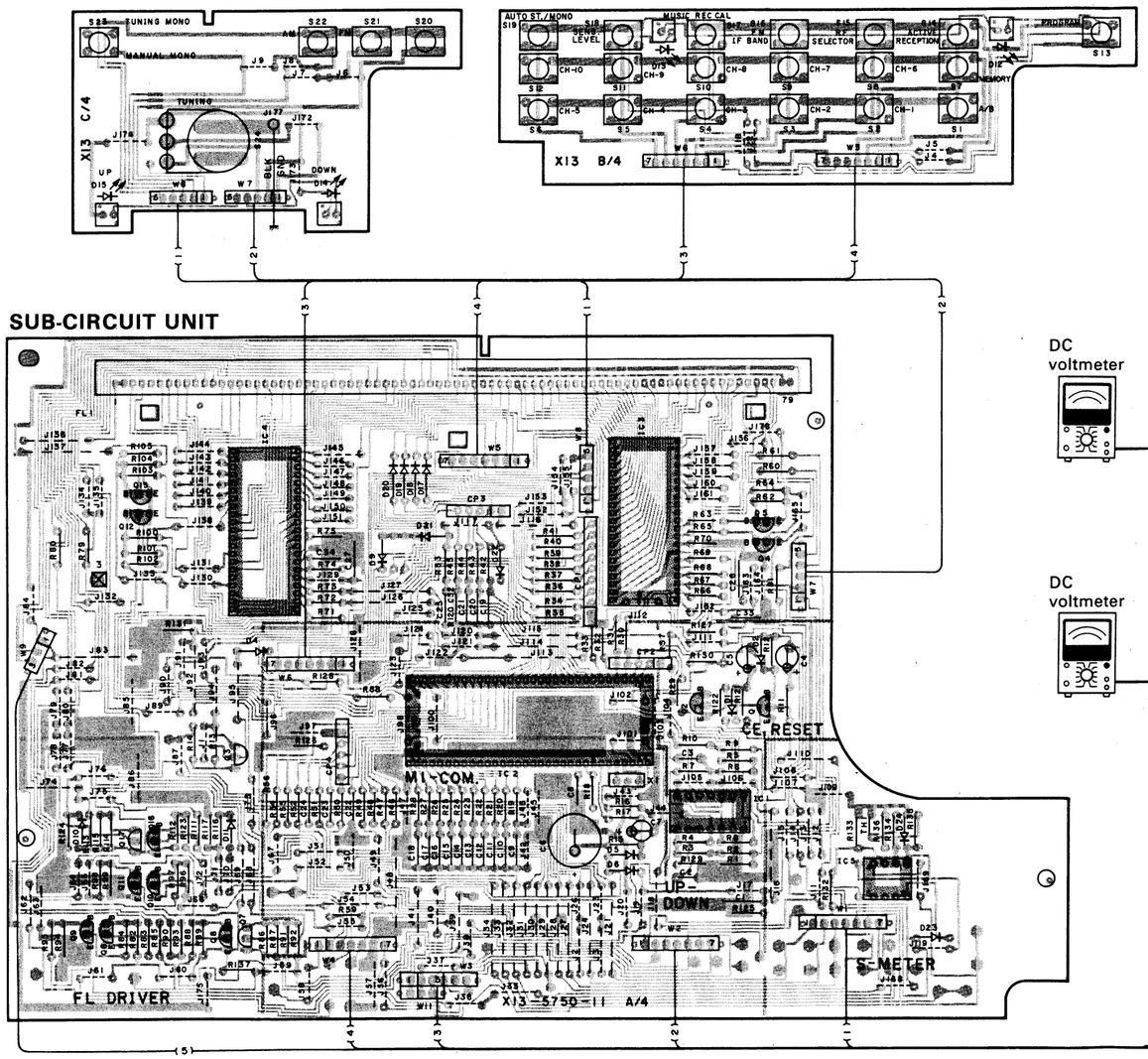
N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG
15	DISTORSION (6) STEREO	(C) 98.0MHz Sélection:L ou R 1kHz.±68.25kHz dév Pilote:±6.75kHz dév 80dBμ (Entrée ANT)	(B)	98.0MHz	VR5 (X86-)	Distorsion minimale.	
15'	DISTORTION (7) STEREO (E et T type)	(C) 98.0MHz Sélection:L ou R 1kHz.±68.25kHz dév Pilote:±6.75kHzdév 80dBμ (Entrée ANT)	(B)	98.0MHz IF BAND: NARROW	VR2 (X86-)	Distorsion minimale.	
	Répéter les ajustements de 10 à 15 plusieurs fois pour minimiser la distorsion.						
16	SEPARATION (1) D→G	(C) 98.0MHz Sélection:R 1kHz.±68.25kHz dév Pilote:±6.75kHz dév 80dBμ (Entrée ANT)	(B)	98.0MHz	VR4 (X05-)	Diaphonie minimale.	
17	SEPARATION (2) G→D	(C) 98.0MHz Sélection:L 1kHz.±68.25kHz dév Pilote:±6.75kHz dév 80dBμ (Entrée ANT)	(B)	98.0MHz	VR5 (X05-)	Diaphonie minimale.	
	Répéter les ajustements de 16 et 17 plusieurs fois pour que les séparations D à G et G à D soient égales.						
SECTION MA		Laisser l'antenne bouche MA installée. SELECTOR: AM TUNING MODE:AUTO REC CAL:OFF PROGRAM:OFF					
[1]	BORD DE BANDE (1)	–	Connecter un voltmètre CC entre les TP3(VT) et 4(GND).	530kHz	L27 (X05-)	1.5V	(a)
[2]	BORD DE BANDE (2)	–	Connecter un voltmètre CC entre les TP3(VT) et 4(GND).	1610kHz	TC3 (X05-)	8.0V	(a)
	Répéter les points [1] et [2] plusieurs fois.						
[3]	ALIGNEMENT HT (1)	(D) ☆ 630kHz 400Hz.30% mod	(B)	630kHz	L26 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
[4]	ALIGNEMENT HT (2)	(D) ☆ 1440kHz 400Hz.30% mod	(B)	1440kHz	TC2 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
	Répéter les points [3] et [4] plusieurs fois.						
[5]	TRANSFORMATEUR FI	(D) ☆ 999kHz 400Hz.30% mod	(B)	999kHz	◆ L28 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
	◆ L28 a été prérèglé de manière à ce que l'ajustement ne soit pas normalement requis. ☆ La crête sera plus facile à localiser si l'antenne à boucle test est utilisée.						

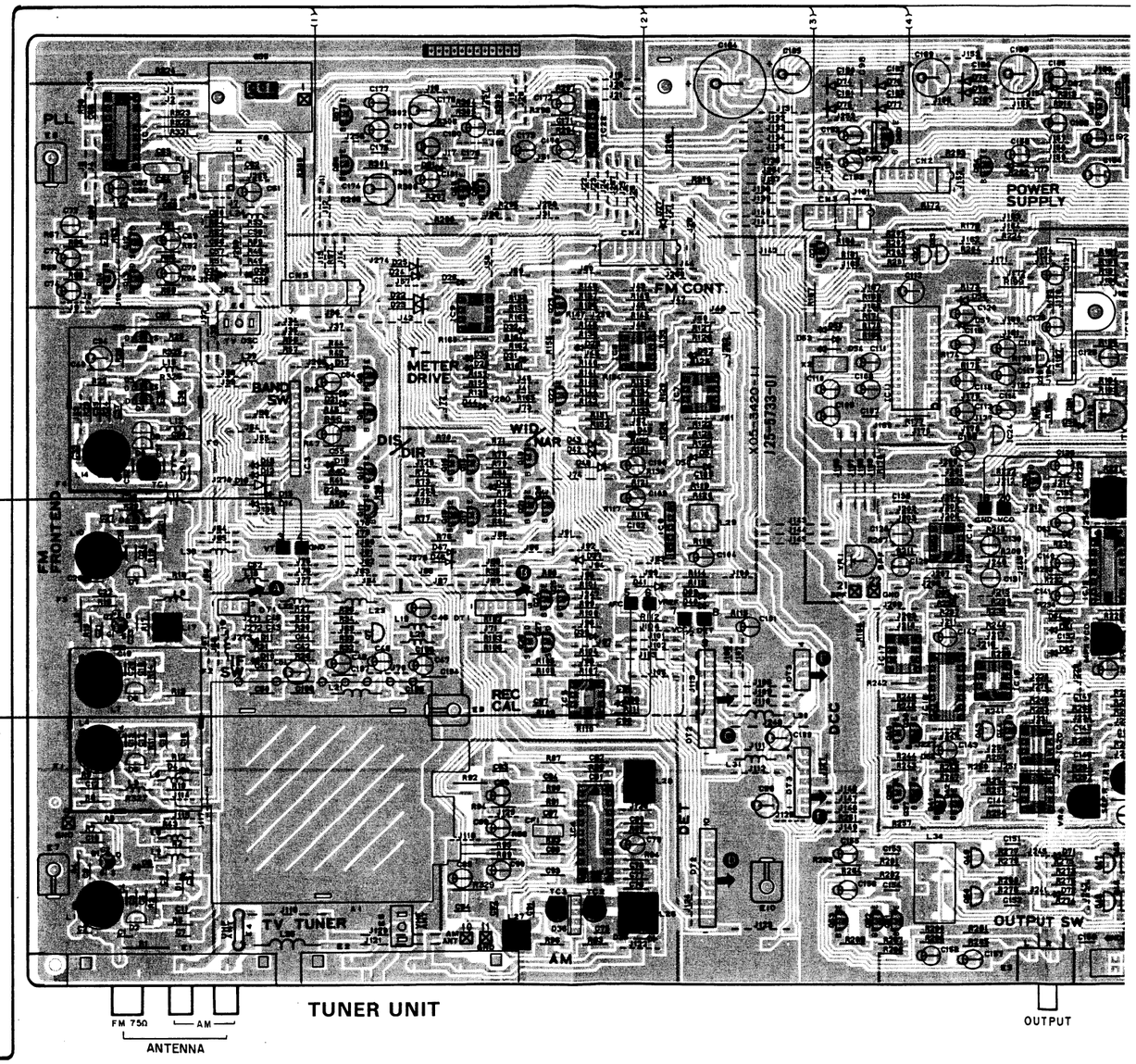
ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-EMPFANGSABTEILUNG		Außer wenn anders angegeben, die verschiedenen Schalter wie folgt einstellen: SELECTOR:FM IF BAND:WIDE RF SELECTOR:DISTANCE TUNING MODE:AUTO REC CAL:OFF PROGRAM:OFF					
1	BANDKANTE (1)	–	Einen Gleichspannungs-messer zwischen TP4(GND) und TP3(VT) anschließen.	TUNING MODE: MANU 87.5MHz	L14 (X05-)	3.0V	(a)
2	BANDKANTE (2)	–	Einen Gleichspannungs-messer zwischen TP4(GND) und TP3(VT) anschließen.	TUNING MODE: MANU 108.0MHz	TC1 (X05-)	25.0V	(a)
	Abstimmungen 1 und 2 mehrere Male wiederholen.						
3	DISKRIMINATOR	(A) 98.0MHz 0 Hub 100dBμ (ANT-Eingang)	Einen Gleichspannungs-messer zwischen TP5(AFC) und TP6(VREF) anschließen.	98.0MHz	L9 (X86-)	0.000V±10mV	(b)
4	PLL-DETEKTOR	(A) 98.0MHz 0 Hub 100dBμ (ANT-Eingang)	Einen Gleichspannungs-messer zwischen TP7(VCC/2) und TP8(DET) anschließen.	98.0MHz	L12 (X86-)	0.000V±20mV	(c)
5	MPX VCO	(A) 98.0MHz 0 Hub 100dBμ (ANT-Eingang)	Einen Frequenzmesser zwischen TP19(GND) und TP20(VCO) anschließen.	98.0MHz	VR3 (X05-)	19.000kHz±10Hz	(d)
6	HF-ABGLEICH	(A) 98.0MHz 1kHz.±75kHz Hub	(B)	98.0MHz	★ L1.4.7.10 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
	★ Die Folge von L1→L4→L7→L10→L1·····einige Male wiederholen.						
7	ZF-ÜBERTRAGER (1)	(A) 98.0MHz 1kHz.±75kHz Hub	(B)	98.0MHz	L17 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
8	ZF-ÜBERTRAGER (2)	(A) 98.0MHz 1kHz.±75kHz Hub	(B)	98.0MHz	L11 (X86-)	Maximal Amplitude und Symmetrie des Oazilloskopbildes.	
9	AUTOSTOP-EMPFINDLICHKEIT	(A) 98.0MHz Wähler:MAIN 1kHz.±75kHz Hub 12dBμ (ANT-Eingang)	–	98.0MHz	VR1 (X86-)	Position, wo die STEREO-Anzeige leuchtet, wenn der Regler von der Einstellung ganz entgegen dem Uhrzeiger-sinn langsam im Uhrzeiger-sinn gedreht wird.	
10	KLIRRFAKTOR (1) DET	(C) 98.0MHz Wähler:MONO 1kHz.±75kHz Hub * 80dBμ (ANT-Eingang)	(B)	98.0MHz	VR3 (X86-)	Minimal Klirrfaktor.	
11	KLIRRFAKTOR (2) MONO	(C) 98.0MHz Wähler:MONO 1kHz.±75kHz Hub * 80dBμ (ANT-Eingang)	(B)	98.0MHz	VR4 (X86-)	Minimal Klirrfaktor.	
12	KLIRRFAKTOR (3) MONO	(C) 98.0MHz Wähler:MONO 1kHz.±75kHz Hub * 80dBμ (ANT-Eingang)	(B)	98.0MHz	VR6 (X86-)	Minimal Klirrfaktor.	
	10, 11 und 12 abwechselnd einige Male einstellen, um die MONO-Verzerrung zu minimieren. * E und T Typen: 1kHz. ±46kHz Hub.						
13	KLIRRFAKTOR (4) STEREO	(C) 98.0MHz Wähler:SUB 1kHz.±68.25kHz Hub Pilotten: ±6.75kHz Hub 80dBμ (ANT-Eingang)	(B)	98.0MHz	VR7 (X86-)	Minimal Klirrfaktor.	
14	KLIRRFAKTOR (5) STEREO	(C) 98.0MHz Wähler:SUB 1kHz.±68.25kHz Hub Pilotten: ±6.75kHz Hub 80dBμ (ANT-Eingang)	(B)	98.0MHz	L33 (X05-)	Minimal Klirrfaktor.	
	Nach der Einstellung von 14 erneut 13 einstellen, um die Verzerrung bei 1kHz zu minimieren.						

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
15	KLIRRFAKTOR (6) STEREO	(C) 98,0MHz Wähler:L oder R 1kHz.±68,25kHz Hub Pilotten: ±6,75kHz Hub 80dBμ (ANT-Eingang)	(B)	98,0MHz	VR5 (X86-)	Minimal Klirrfaktor.	
15'	KLIRRFAKTOR (7) STEREO NARROW (E & T Typen)	(C) 98,0MHz Wähler:L oder R 1kHz.±68,25kHz Hub Pilotten: ±6,75kHz Hub 80dBμ (ANT-Eingang)	(B)	98,0MHz IF BAND: NARROW	VR2 (X86-)	Minimal Klirrfaktor.	
	Die Einstellungen von 10 bis 15 einige Male wiederholen, um die Verzerrung zu minimieren.						
16	STEREO KANAL TRENNUNG (1) R → L	(C) 98,0MHz Wähler:R 1kHz.±68,25kHz Hub Pilotten: ±6,75kHz Hub 80dBμ (ANT-Eingang)	(B)	98,0MHz	VR4 (X05-)	Minimales Übersprechen.	
17	STEREO KANAL TRENNUNG (2) L → R	(C) 98,0MHz Wähler:L 1kHz.±68,25kHz Hub Pilotten: ±6,75kHz Hub 80dBμ (ANT-Eingang)	(B)	98,0MHz	VR5 (X05-)	Minimales Übersprechen.	
	Die Einstellungen von 16 und 17 einige Male wiederholen, so daß die Trennung von Rechts zu Links und von Links zu Rechts gleich ist.						
	MW-EMPFANGSABTEILUNG Die MW-Rahmwnantenne angebracht lassen. SELECTOR:AM TUNING MODE:AUTO REC CAL:OFF PROGRAM:OFF						
[1]	BANDKANTE (1)	–	Einen Gleichspannungs-messer zwischen TP3(VT) und TP4(GND) anschließen.	530kHz	L27 (X05-)	1,5V	(a)
[2]	BANDKANTE (2)	–	Einen Gleichspannungs-messer zwischen TP3(VT) und TP4(GND) anschließen.	1610kHz	TC3 (X05-)	8,0V	(a)
	Abstimmungen [1] und [2] mehrere Male wiederholen.						
[3]	HF-ABGLEICH (1)	(D) ☆ 630kHz 400Hz.30% mod	(B)	630kHz	L26 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
[4]	HF-ABGLEICH (2)	(D) ☆ 1440kHz 400Hz.30% mod	(B)	1440kHz	TC2 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
	Abstimmungen [3] und [4] mehrere Male wiederholen.						
[5]	ZF-ÜBERTRAGER	(D) ☆ 999kHz 400Hz.30% mod	(B)	999kHz	◆ L28 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
	◆ L28 ist ab Werk eingestellt, so daß normalerweise keine Einstellung erforderlich ist. ☆ Bei Verwendung der Test-Rahmenantenne kann die Spitze leichter gefunden werden.						

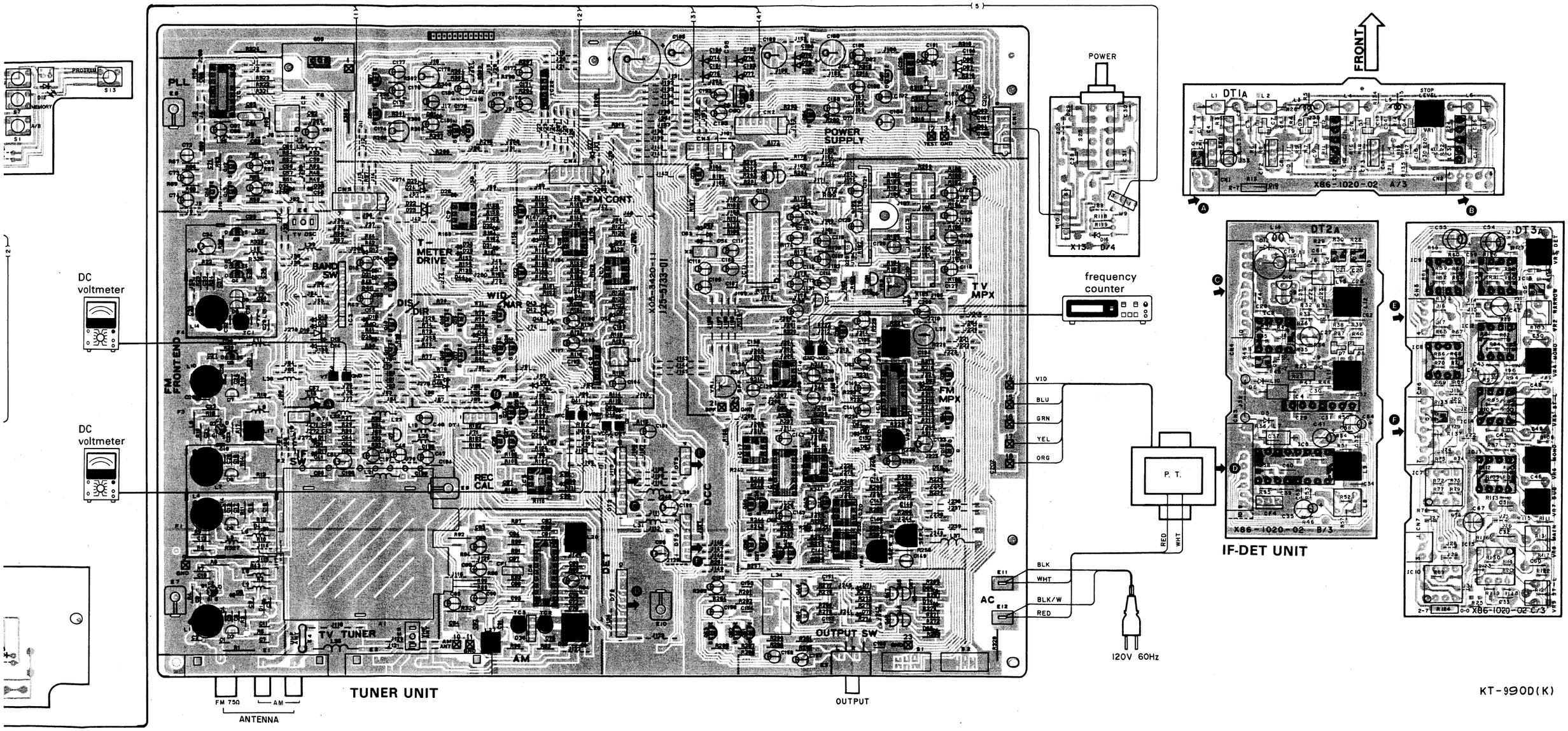



SUB-CIRCUIT UNIT
TUNING MONO
MANUAL MONO
TUNING
UP
DOWN
X13 C/4
AUTO ST./MONO
MUSIC REC CAL
SENS LEVEL
IF BAND
SELECTOR
ACTION RECEPTION
PROGRAM
MEMORY
X13 B/4
DC voltmeter
DC voltmeter
FL
MI-COM
CE RESET
UP
DOWN
S-METER
FL DRIVER
X13-5750-11 A/4
(1)
(2)
(3)
(4)
(5)


PLL
POWER SUPPLY
FM CONT
METER DRIVE
BAND SW
DIS DIR
WID NAR
FM FRONT END
IF SW
REC CAL
DCC
DET
TV TUNER
AM
OUTPUT SW
FM 75Ω
AM
ANTENNA
OUTPUT
TUNER UNIT

PC BOARD

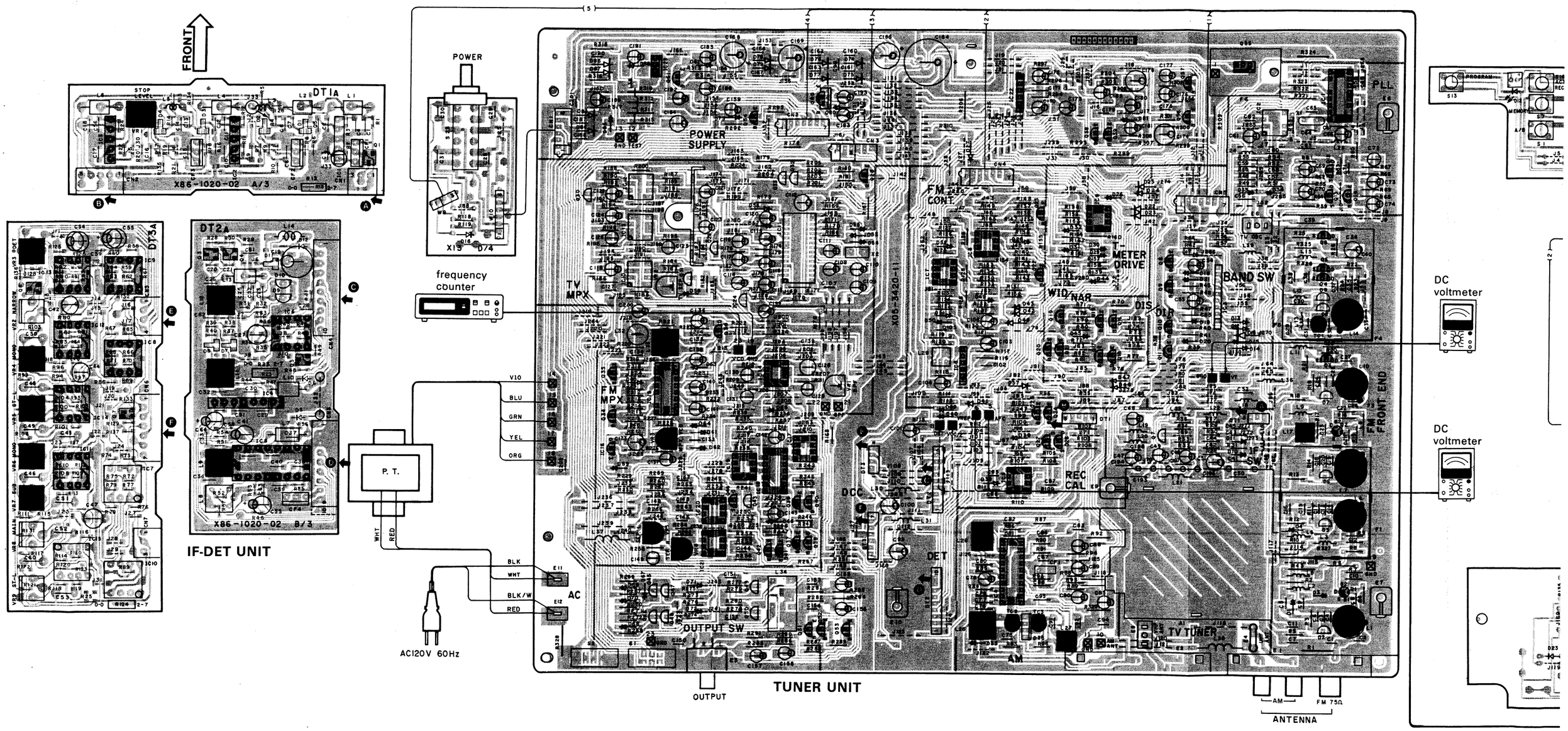
COMPONENT SIDE VIEW

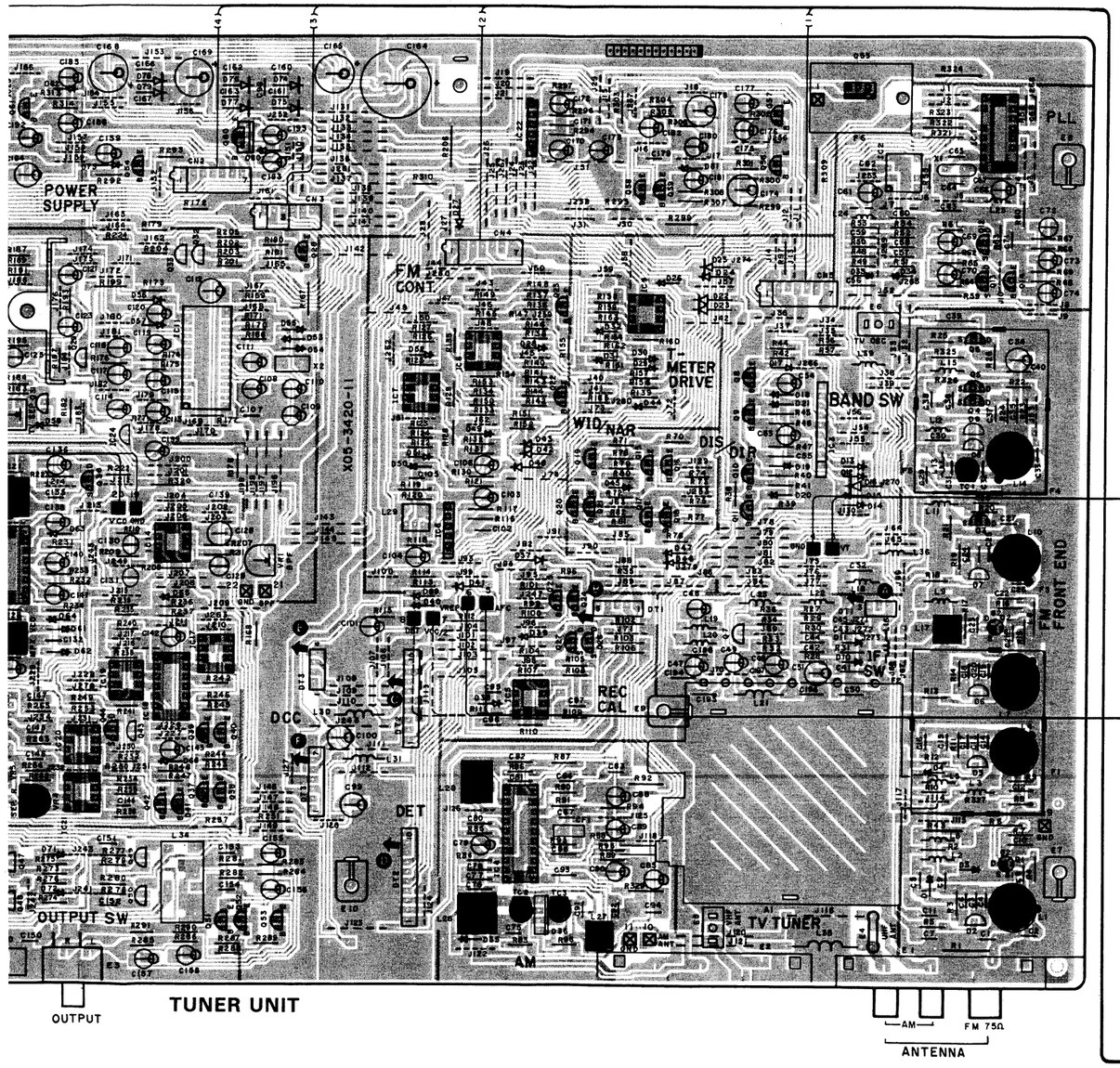


KT-990D(K)

Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD
FOIL SIDE VIEW

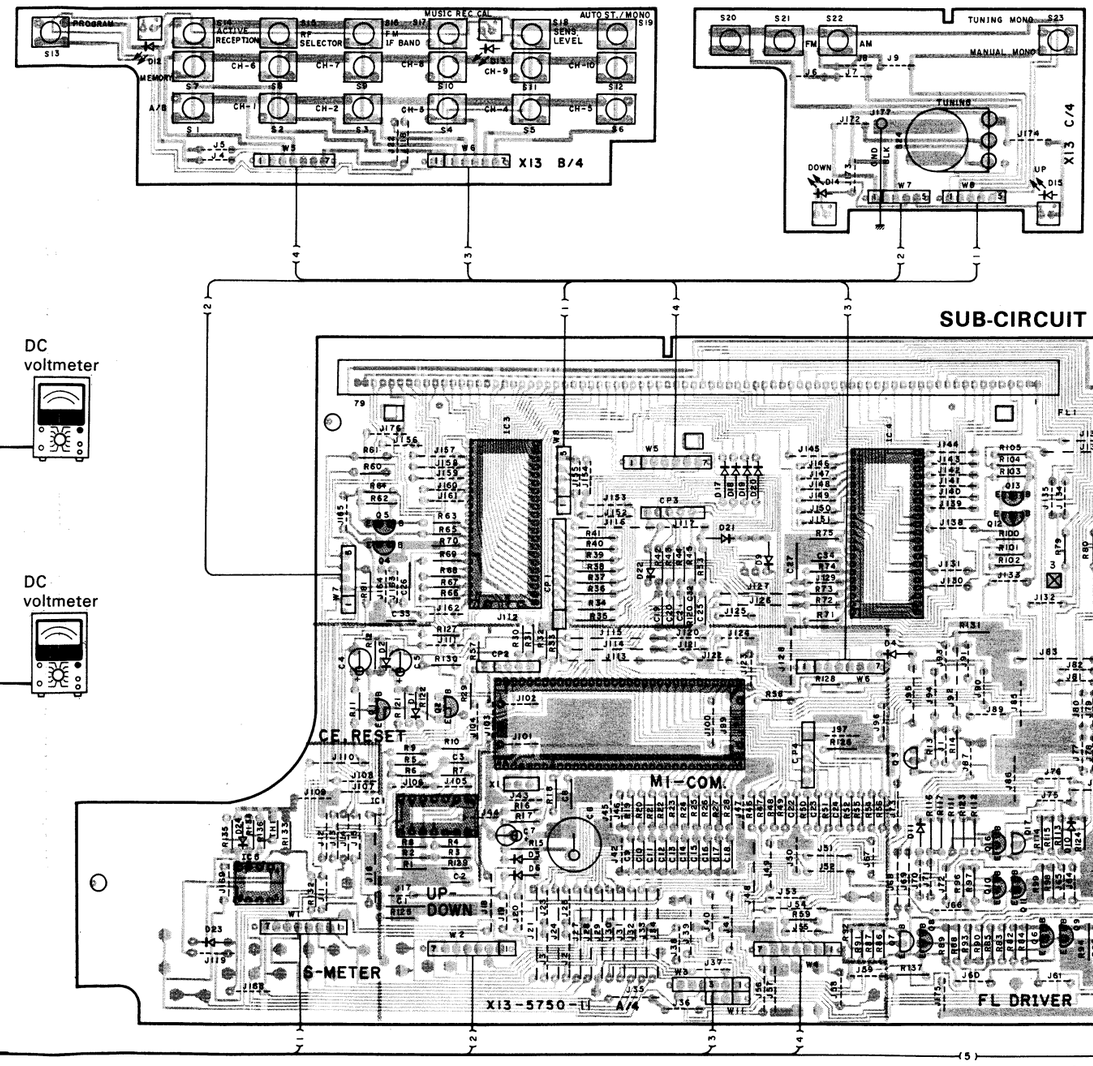




TUNER UNIT

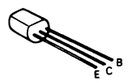
DC voltmeter

DC voltmeter

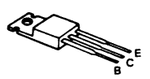


KT-990D(K)

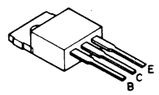
Refer to the schematic diagram for the values of resistors and capacitors.



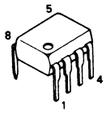
2SA733 (A)
2SA954
2SA999
2SB764
2SC2003
2SC2320
2SC945 (A)
2SD1302
2SD863



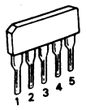
MC1495L



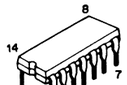
2SC2167



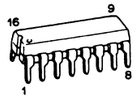
NJM4200D



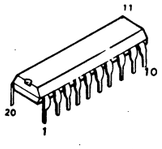
M5231TL



UPD4069UC

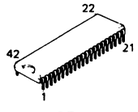


LA1231NS
LA3350S
LM7001

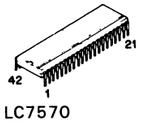


LA1245

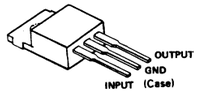
UPC1163HA



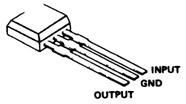
M5218P



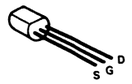
LC7570



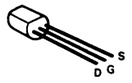
UPC7805HF



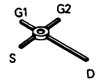
UPC78L12J



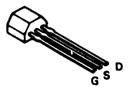
2SK246



2SK364



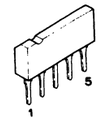
3SK122



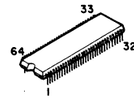
2SK161
2SK241

2SK211
2SK302

2SK425



BA401



CXP5016-216S

(X05-342X-XX)

DESTINATION	No.	R1, 328 330	R59, 92, 112, 119, 299 303, 313, 318, 320, 325	R252	R261 262	C145 146	C147, 148 R265, 266	C149	D43, R37 R249 ~ 251	L3, 15	L35 R326, 327	J230	J251	TC1	R20	R22	C204~208
K	0~11	YES		4.7K	3K	7500P	NO	1200P	NO	NO	YES	NO	YES	YES	680	8.2K	NO
M	0~21	NO		4.7K	3K	4700P	YES	1200P	NO	YES	NO	YES	YES	NO	680	8.2K	NO
E, T	2~71	NO		3.9K	3.3K	4700P	NO	2000P	YES	NO	YES	NO	NO	NO	330	4.7K	YES

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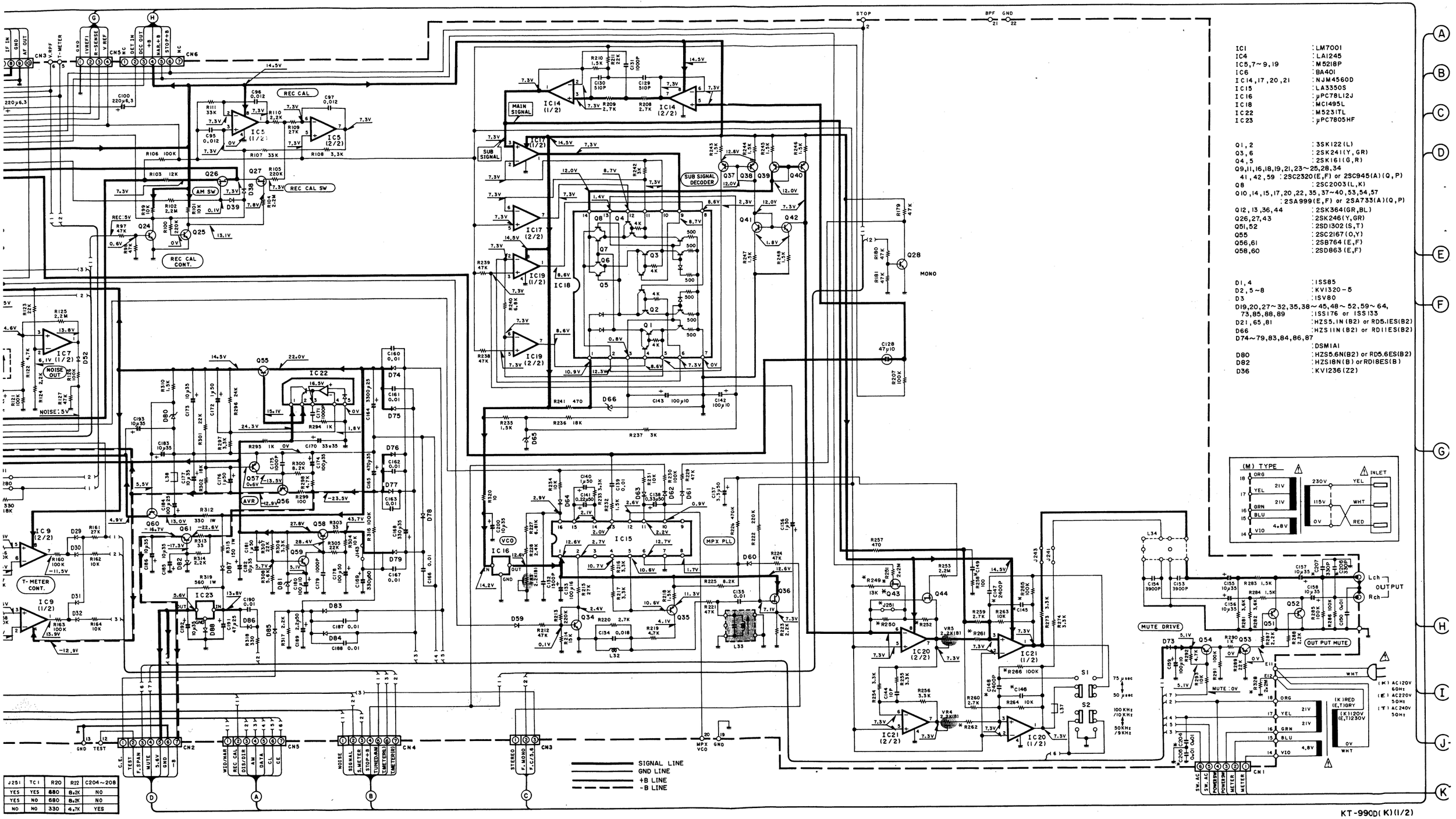


CAUTION: For continued safety, replace safety critical components only with manufacture's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

- DC voltages are measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédence. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

KT-990D

KENWOOD

U V W X Y Z AA BB CC DD EE

2SA733 (A)
2SA954
2SA999
2SB764
2SC2003
2SC2320
2SC945 (A)
2SD1302
2SD863

MC1495L

2SC2167

NJM4200D

M5231TL

UPD4069UC

LA1231NS
LA3350S
LM7001

(X86-102X-XX) (A/3)

IF AMP 1 / IF AMP 2 / IF AMP 3 / IF AMP 4

IC2,3 : BA401
Q1 : 2SK302(Y,GR)
D2~4 : 1SS184

(X86-102X-XX)

DESTINATION	No.	R13,23,124	R14	R20	R22	R98	R102	R107	R111	J30	CF1,4	A
K,M	0-02	22	150	NO	NO	33K	10K	22K	10K	YES	L72-0546-05	NO
E,T	2-73	33	100	YES	YES	12K	3.3K	8.2K	3.3K	NO	L72-0536-05	YES

(X86-102X-XX)(C/3)
IC8,9 : NJM4200D
IC11~4 : M5218P
Q6,7 : 2SK425(X16,X17)

(X86-102X-XX) (C/3)

DIST. GEN. CIRCUIT / DISTORTION NARROW / VR3~7 DISTORTION

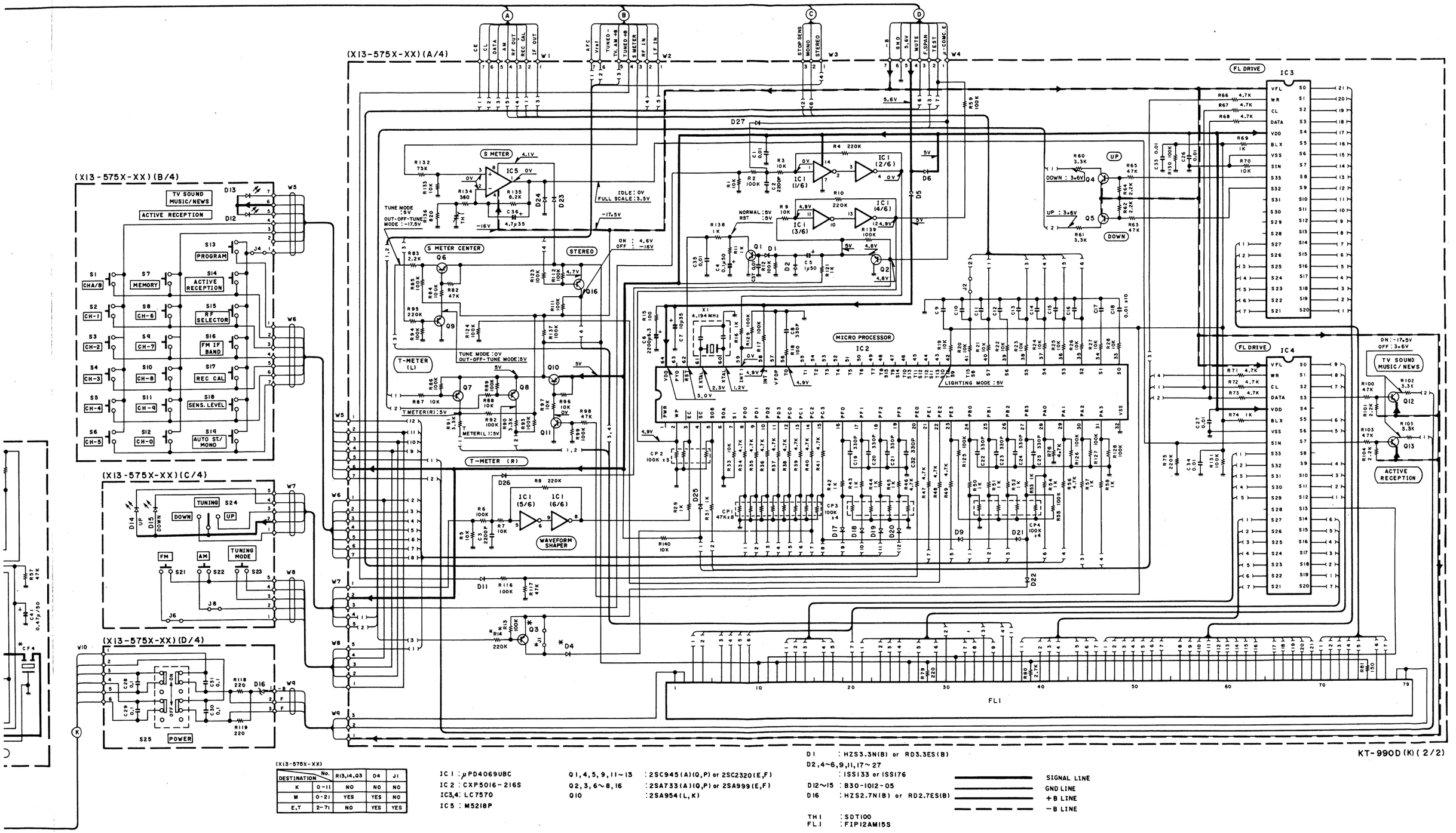
(X86-102X-XX)(B/3)

PLL DET / IF AMP 2 / IF AMP 3 / IF AMP 4 / IF AMP 5 / SIGNAL SW / IF AMP +CONTROL

(X86-102X-XX)(B/3)
IC4 : μPC1163HA
IC5 : LA1231NS
IC6 : NJM4560D
Q3,4 : 2SK211(Y,GR)
Q5 : 2SK425(X16,X17)
D5,6,12 : RLS-73
D7,8 : 1SS226
D9,10 : KV1320-2
D11 : RD5.1M(B2)

(X13-575X-XX)

LA1245
UPC1163HA
M5218P
LC7570
UPC7805HF
UPC78L12J
2SK246
2SK364
3SK122
2SK161
2SK241
2SK211
2SK302
2SK425
BA401
CXP5016-216S



(X13-575X-XX) DESTINATION \ No.	R13,14,03	D4	J1
K	0-11	NO	NO
M	0-21	YES	NO
E,T	2-71	NO	YES

IC1 : μPD4069UBC
IC2 : CXP5016-216S
IC3,4 : LC7570
IC5 : M5218P

Q1,4,5,9,11~13 : 2SC945(A)(Q,P) or 2SC2320(E,F)
Q2,3,6~8,16 : 2SA733(A)(Q,P) or 2SA999(E,F)
Q10 : 2SA954(L,K)

D1 : HZS3.3N(B) or RD3.3ES(B)
D2,4~6,9,11,17~27 : 1SS133 or 1SS176
D12~15 : B30-1012-05
D16 : HZS2.7N(B) or RD2.7ES(B)

TH1 : SDT100
FL1 : FIP12AM15S

SIGNAL LINE
GND LINE
+B LINE
−B LINE

KT-990D(K)(2/2)

CAUTION: For continued safety, replace safety critical components only with manufacture's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before tha appliance is returned to the customer.

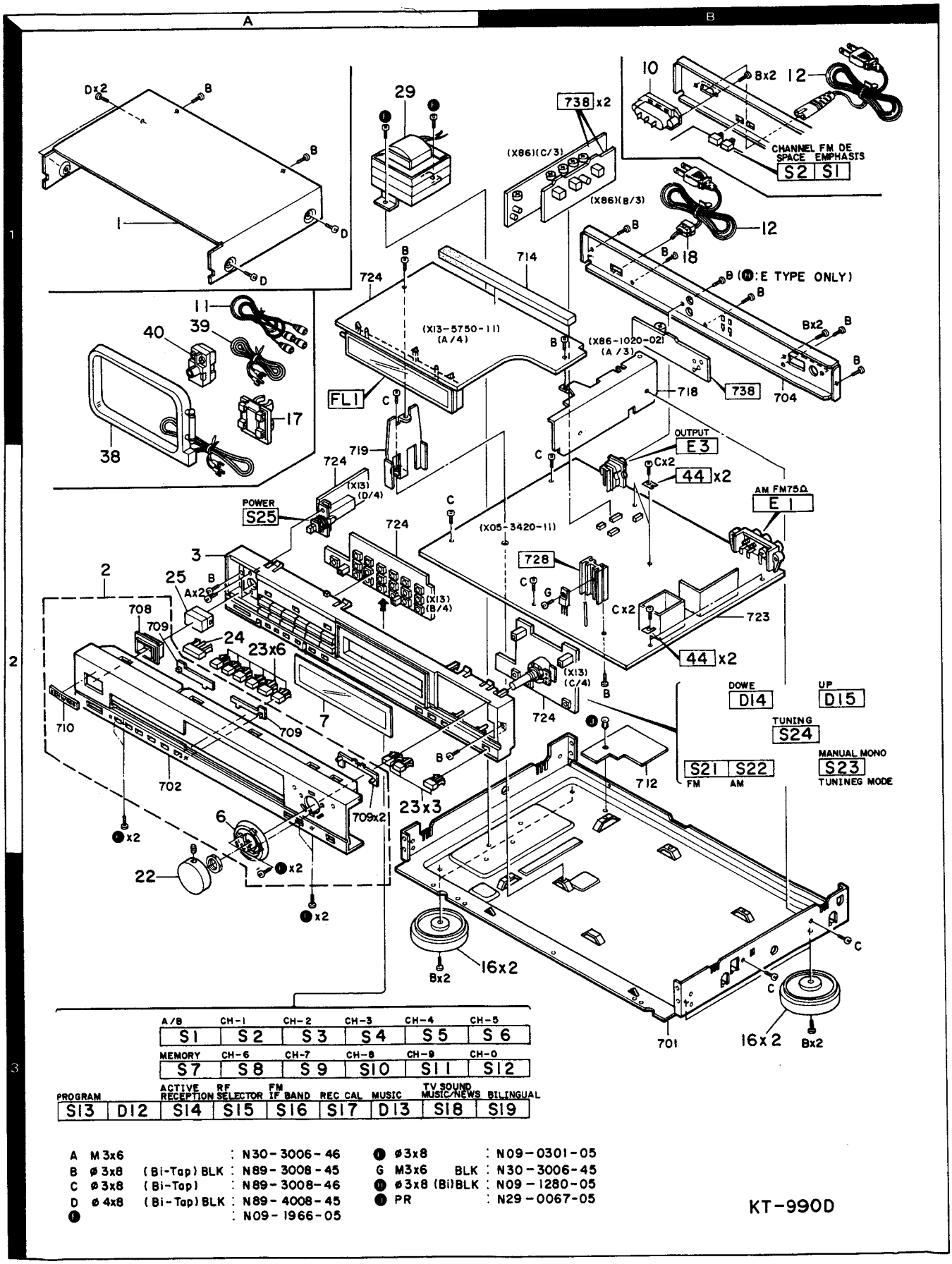
DC voltages are as measured with a high impedance voltmeter during reception of the FM broadcast signal (with a signal strength of 60 dB at the ANT terminal). Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance pendant la réception d'un signal de programme FM (avec une force de signal de 60 dB à la borne ANT). Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser bei Empfang eines UKW-Signals (mit einer Feldstärke von 60 dB am Antennenanschluß) gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

KT-990D
KENWOOD

EXPLODED VIEW



A/B	CH-1	CH-2	CH-3	CH-4	CH-5
S1	S2	S3	S4	S5	S6

MEMORY	CH-6	CH-7	CH-8	CH-9	CH-0
S7	S8	S9	S10	S11	S12

PROGRAM		ACTIVE RECEPTION	RF SELECTOR	FM IF BAND	REC CAL	MUSIC	TV SOUND MUSIC/NEWS	BILINGUAL
S13	D12	S14	S15	S16	S17	D13	S18	S19

A	M3x6		: N30-3006-46	●	ø3x8	: N09-0301-05	
B	ø3x8	(Bi-Tap) BLK	: N89-3008-45	G	M3x6	BLK : N30-3006-45	
C	ø3x8	(Bi-Tap)	: N89-3008-46	ⓗ	ø3x8	(Bi)BLK : N09-1280-05	
D	ø4x8	(Bi-Tap) BLK	: N89-4008-45	●	PR	: N29-0067-05	
●			: N09-1966-05				

KT-990D

Parts withe the exploded numbers larger than 700 are not supplied.

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PARTS LIST

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				KT-V990D			
	1	1A		A01-1577-01	METALLIC CABINET		
	2	2A	*	A20-5340-02	PANEL ASSY		
	3	2A	*	A22-0911-02	SUB PANEL ASSY		
	6	2A		B07-1755-04	ESCUTCHEON (TUNING)		
	7	2A		B10-0896-03	FRONT GLASS (DISPLAY)		
	--			B46-0092-03	WARRANTY CARD	K	
	-			B46-0122-13	WARRANTY CARD	E	
	--			B46-0143-03	WARRANTY CARD	T	
	-			B50-8516-00	INSTRUCTION MANUAL(G,D,I)	E	
	-			B50-8518-00	INSTRUCTION MANUAL(ENGLISH)		
	-			B50-8519-00	INSTRUCTION MANUAL(FRENCH)	ME	
	-		*	B50-8520-00	INSTRUCTION MANUAL(SPANISH)	M	
	-			B58-0269-04	CAUTION CARD	K	
	-			B58-0803-13	CAUTION CARD	E	
⚠	10	1B		E03-0102-25	AC INLET	M	
	11	1A		E30-0505-05	AUDIO CORD		
⚠	12	1B		E30-0459-05	AC POWER CORD	E	
⚠	12	1B		E30-0996-05	AC POWER CORD	K	
⚠	12	1B		E30-1305-15	AC POWER CORD (INLET)	M	
⚠	12	1B		E30-1416-05	AC POWER CORD	T	
	-			H01-7677-04	ITEM CARTON CASE		
	-			H10-3499-02	POLYSTYRENE FOAMED FIXTURE(L)		
	-			H10-3500-02	POLYSTYRENE FOAMED FIXTURE(R)		
	-			H25-0181-04	PROTECTION BAG (150X260X0.05)		
	-			H25-0224-04	PROTECTION BAG (800X400X0.03)		
	--			H25-0232-04	PROTECTION BAG (235X350X0.03)		
	16	3B		J02-0190-15	FOOT		
	17	1A		J19-0875-03	ANTENNA HOLDER		
⚠	18	1B		J42-0083-05	POWER CORD BUSHING	KTE	
	-			J61-0307-05	WIRE BAND		
	22	3A		K21-0409-04	KNOB (TUNING)		
	23	2A		K27-1761-04	KNOB (BUTTON) SELECTOR		
	24	2A		K27-1791-04	KNOB (BUTTON) PROGRAM		
	25	2A		K29-2724-04	KNOB ASSY (POWER		
	29	1A		L01-4711-05	POWER TRANSFORMER	K	
	29	1A		L01-4712-05	POWER TRANSFORMER	TE	
	29	1A		L01-4714-05	POWER TRANSFORMER	M	
	E	1A	*	N09-1966-05	TAPTITE SCREW		
	F	2A,3A		N09-0301-05	TAPTITE SCREW (Ø3X8)		
	H	1B		N09-1280-05	TAPTITE SCREW (Ø3X8)	E	
	J	1B		N29-0067-05	PUSH RIVET (3.5X4.5)	TE	
	38	2A		T90-0111-15	LOOP ANTENNA		
	39	1A		T90-0132-05	T TYPE ANTENNA		
	40	1A		T90-0136-05	ANTENNA ADAPTOR		
				TUNER UNIT (X05-3420-11)			
	C2			CC45FSL1H390J	CERAMIC 39PF J		
	C4			CC45FTH1H060D	CERAMIC 6.0PF D		
	C5			CC45FSL1H010C	CERAMIC 1.0PF C		
	C6			CC45FSH1H330J	CERAMIC 33PF J		
	C7			CK45FF1H103Z	CERAMIC 0.010UF Z		

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C8			CC45FSL1H050C	CERAMIC	5.0PF C		
C9			CC45FSL1H020C	CERAMIC	2.0PF C		
C10			C91-0757-05	CERAMIC	0.001UF K		
C11			CK45FF1H103Z	CERAMIC	0.010UF Z		
C12			C91-0757-05	CERAMIC	0.001UF K		
C14			CC45FTH1H080D	CERAMIC	8.0PF D		
C15			CC45FSL1H020C	CERAMIC	2.0PF C		
C16			CC45FSL1H010C	CERAMIC	1.0PF C		
C17 ,18			CC45FSH1H330J	CERAMIC	33PF J		
C19			CC45FTH1H080D	CERAMIC	8.0PF D		
C21			CC45FSL1H070D	CERAMIC	7.0PF D		
C22			C91-0749-05	CERAMIC	220PF K		
C23			CK45FF1H103Z	CERAMIC	0.010UF Z		
C24			CC45FSH1H330J	CERAMIC	33PF J		
C25			CC45FSH1H090D	CERAMIC	9.0PF D		
C26 ,27			CC45FSL1H050C	CERAMIC	5.0PF C		
C28			C91-0757-05	CERAMIC	0.001UF K		
C29			CC45FSL1H010C	CERAMIC	1.0PF C		
C30			C91-0757-05	CERAMIC	0.001UF K		
C31			CC45FSH1H330J	CERAMIC	33PF J		
C33			CC45FUJ1H150J	CERAMIC	15PF J		
C34			CE04KW1C220M	ELECTRO	22UF 16WV		
C35			C91-0757-05	CERAMIC	0.001UF K		
C36			CC45FUJ1H100D	CERAMIC	10PF D		
C37			CC45FUJ1H070D	CERAMIC	7.0PF D		
C38			CC45FSL1H010C	CERAMIC	1.0PF C		
C39			C91-0737-05	CERAMIC	47PF J		
C40			C91-0757-05	CERAMIC	0.001UF K		
C53			CE04KW1H010M	ELECTRO	1.0UF 50WV		
C54			CE04KW1V100M	ELECTRO	10UF 35WV		
C55			C91-0749-05	CERAMIC	220PF K		
C63			C91-0769-05	CERAMIC	0.01UF M		
C64			CC45FCH1H330J	CERAMIC	33PF J		
C65			CC45FCH1H220J	CERAMIC	22PF J		
C66			CE04KW1H010M	ELECTRO	1.0UF 50WV		
C67			C91-0757-05	CERAMIC	0.001UF K		
C69			CE04KW1V330M	ELECTRO	33UF 35WV		
C70			CE04KW1V4R7M	ELECTRO	4.7UF 35WV		
C71			CK45FF1H223Z	CERAMIC	0.022UF Z		
C72			C90-1331-05	NP-ELEC	0.47UF 50WV		
C74			CE04KW1H2R2M	ELECTRO	2.2UF 50WV		
C75			CK45FF1H223Z	CERAMIC	0.022UF Z		
C76			C91-0769-05	CERAMIC	0.01UF M		
C77			C91-0757-05	CERAMIC	0.001UF K		
C78			C91-0769-05	CERAMIC	0.01UF M		
C79			CE04KW1V100M	ELECTRO	10UF 35WV		
C80 ,81			C91-0769-05	CERAMIC	0.01UF M		
C82			C91-0757-05	CERAMIC	0.001UF K		
C83			CF92FV1H683J	MF	0.068UF J		
C84			CF92FV1H103J	MF	0.010UF J		
C85			CE04KW1H010M	ELECTRO	1.0UF 50WV		
C86			C91-0769-05	CERAMIC	0.01UF M		
C87			CF92FV1H103J	MF	0.010UF J		
C88			CE04KW1C470M	ELECTRO	47UF 16WV		
C89 ,90			CE04KW1H3R3M	ELECTRO	3.3UF 50WV		

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C91			CC93FCH1H391J	CERAMIC	390PF	J		
C92			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C93			C91-0769-05	CERAMIC	0.01UF	M		
C94			C91-0737-05	CERAMIC	47PF	J		
C95 -97			CF92FV1H123J	MF	0.012UF	J		
C99 ,100			CE04KW0J221M	ELECTRO	220UF	6.3WV		
C101			CE04KW1H2R2M	ELECTRO	2.2UF	50WV		
C102			CC45FSL1H101J	CERAMIC	100PF	J		
C103			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C104			CE04KW1V100M	ELECTRO	10UF	35WV		
C105			CF92FV1H103J	MF	0.010UF	J		
C106			CE04KW1HR47M	ELECTRO	0.47UF	50WV		
C128			C90-1334-05	NP-ELEC	47UF	10WV		
C129,130			CQ09FS1H511J	POLYSTY	510PF	J		
C131			CQ09FS1H102J	POLYSTY	1000PF	J		
C132			CQ93HP2A152J	MYLAR	1500PF	J		
C133			CE04KW1C101M	ELECTRO	100UF	16WV		
C134			CQ93HP2A183J	MYLAR	0.018UF	J		
C135			CF92FV1H103J	MF	0.010UF	J		
C136			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C137			CE04KW1H3R3M	ELECTRO	3.3UF	50WV		
C138			CE04GW1HR33M	LL-ELEC	0.33UF	50WV		
C139			CF92FV1H103J	MF	0.010UF	J		
C140			CE04GW1H010M	LL-ELEC	1.0UF	50WV		
C141			CE04GW1HR22M	LL-ELEC	0.22UF	50WV		
C142,143			CE04KW1A101M	ELECTRO	100UF	10WV		
C144			CC45FSL1H100D	CERAMIC	10PF	D		
C145,146			CF92FV1H472J	MF	4700PF	J	MTE	
C145,146			CF92FV1H752J	MF	7500PF	J	K	
C147,148			CF92FV1H242J	MF	2400PF	J	M	
C149			CQ09FS1H122J	POLYSTY	1200PF	J	KM	
C149			CQ09FS1H202J	POLYSTY	2000PF	J	TE	
C150			CK45FF1H103Z	CERAMIC	0.010UF	Z	TE	
C153,154			CF92FV1H392J	MF	3900PF	J		
C155-158			CE04KW1V100M	ELECTRO	10UF	35WV		
C159			CE04KW1A101M	ELECTRO	100UF	10WV		
C160-163			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C164			CE04KW1E332M	ELECTRO	3300UF	25WV		
C165			CE04KW1V471M	ELECTRO	470UF	35WV		
C166,167			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C168			CE04KW1V331M	ELECTRO	330UF	35WV		
C169			CE04KW1H331M	ELECTRO	330UF	50WV		
C170			CE04KW1V330M	ELECTRO	33UF	35WV		
C171			C91-0757-05	CERAMIC	0.001UF	K		
C172			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C173			CE04KW1V100M	ELECTRO	10UF	35WV		
C174			CE04KW1V101M	ELECTRO	100UF	35WV		
C175			CK45FB1H102K	CERAMIC	1000PF	K		
C176			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C177			CE04KW1V100M	ELECTRO	10UF	35WV		
C178			CE04KW1H101M	ELECTRO	100UF	50WV		
C179			CK45FB1H102K	CERAMIC	1000PF	K		
C180			CE04KW1A101M	ELECTRO	100UF	10WV		
C181			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C182,183			CE04KW1V100M	ELECTRO	10UF	35WV		

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C184			CE04KW1E101M	ELECTRO 100UF 25WV		
C185,186			CE04KW1V100M	ELECTRO 10UF 35WV		
C187,188			CK45FF1H103Z	CERAMIC 0.010UF Z		
C189			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C190			CK45FF1H103Z	CERAMIC 0.010UF Z		
C191			CE04KW1E470M	ELECTRO 47UF 25WV		
C192,193			CE04KW1V100M	ELECTRO 10UF 35WV		
C200			CE04KW1V100M	ELECTRO 10UF 35WV		
C203-208			C91-0749-05	CERAMIC 220PF K		
TC1			C05-0301-05	CERAMIC TRIMMER CAPACITOR(7PF)		
TC2 ,3			C05-0303-05	CERAMIC TRIMMER CAPACITOR(20PF		
44	2B		E23-0149-05	TERMINAL		
E1	2B		E20-0318-05	SCREW TERMINAL BOARD(2P)ANT		
E3	2B		E13-0235-05	PHONO JACK(2P) OUTPUT		
CF1			L72-0096-05	CERAMIC FILTER		
L1			L31-0545-05	FM-RF COIL		
L2			L40-1092-14	SMALL FIXED INDUCTOR(1.0UH,M)		
L3			L92-0017-05	FERRITE CORE	M	
L4			L31-0546-05	FM-RF COIL		
L5 ,6			L40-1092-14	SMALL FIXED INDUCTOR(1.0UH,M)		
L7			L31-0545-05	FM-RF COIL		
L8			L40-1092-14	SMALL FIXED INDUCTOR(1.0UH,M)		
L9			L92-0017-05	FERRITE CORE		
L10			L32-0270-05	FM OSCILLATING COIL		
L11			L92-0017-05	FERRITE CORE		
L12 ,13			L40-1001-17	SMALL FIXED INDUCTOR(10UH,K)		
L14			L32-0270-05	FM OSCILLATING COIL		
L15 ,16			L92-0017-05	FERRITE CORE	M	
L16			L92-0017-05	FERRITE CORE	KTE	
L17			L30-0434-05	FM IFT		
L25			L40-1001-17	SMALL FIXED INDUCTOR(10UH,K)		
L26			L31-0509-05	MW-RF COIL		
L27			L32-0277-15	MW OSCILLATING COIL		
L28			L30-0467-05	AM IFT		
L29			L39-0128-05	PEAKING COIL		
L30 ,31			L92-0017-05	FERRITE CORE		
L32			L39-0143-05	PEAKING COIL		
L33			L35-0064-05	MPX COIL		
L34			L79-0729-05	LC FILTER		
L35 ,36			L40-1092-14	SMALL FIXED INDUCTOR(1.0UH,M)	KTE	
L36			L40-1092-14	SMALL FIXED INDUCTOR(1.0UH,M)	M	
L37 -39			L92-0017-05	FERRITE CORE		
X1			L77-1122-05	CRYSTAL RESONATOR		
R1			RC05GF2H185M	RC 1.8M M 1/2W	K	
R43			RS14KB3A681J	FL-PROOF RS 680 J 1W		
R59			RD14GB2E330J	FL-PROOF RD 33 J 1/4W	KTE	
R92			RD14GB2E101J	FL-PROOF RD 100 J 1/4W	KTE	
R119			RD14GB2E101J	FL-PROOF RD 100 J 1/4W	KTE	
R227			RN14BK2C6811F	RN 6.81K F 1/6W		
R299			RD14GB2E101J	FL-PROOF RD 100 J 1/4W	KTE	
R303			RD14GB2E330J	FL-PROOF RD 33 J 1/4W	KTE	
R312			RS14KB3A331J	FL-PROOF RS 330 J 1W		
R313			RD14GB2E330J	FL-PROOF RD 33 J 1/4W	KTE	

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R315			RS14KB3A151J	FL-PROOF RS 150 J 1W		
R318			RD14GB2E331J	FL-PROOF RD 330 J 1/4W	KTE	
R319			RS14KB3A561J	FL-PROOF RS 560 J 1W		
R320			RD14GB2E100J	FL-PROOF RD 10 J 1/4W	KTE	
R325			RD14GB2E101J	FL-PROOF RD 100 J 1/4W	KTE	
R326,327			RD14GB2E470J	FL-PROOF RD 47 J 1/4W	KTE	
R328			R92-0173-05	RC 2.2M M 1/2W	K	
VR3			R12-1085-05	TRIMMING POT. (MPX VCO)		
VR4 ,5		*	R12-1087-05	TRIMMING POT. (SEPARATION)		
S1 ,2	1B		S31-2094-05	SLIDE SWITCH (CH,FM)	M	
D1			1SS85	DIODE		
D2			KV1320-5	VARIABLE CAPACITANCE DIODE		
D3			1SV80	DIODE		
D4			1SS85	DIODE		
D5 -8			KV1320-5	VARIABLE CAPACITANCE DIODE		
D19 ,20			1SS133	DIODE		
D19 ,20			1SS176	DIODE		
D21			HZS5.1N(B2)	ZENER DIODE		
D21			RD5.1ES(B2)	ZENER DIODE		
D27 -32			1SS133	DIODE		
D27 -32			1SS176	DIODE		
D35			1SS133	DIODE		
D35			1SS176	DIODE		
D36			KV1236(Z2)	VARIABLE CAPACITANCE DIODE		
D38 -45			1SS133	DIODE		
D38 -45			1SS176	DIODE		
D48 -52			1SS133	DIODE		
D48 -52			1SS176	DIODE		
D59 -64			1SS133	DIODE		
D59 -64			1SS176	DIODE		
D65			HZS5.1N(B2)	ZENER DIODE		
D65			RD5.1ES(B2)	ZENER DIODE		
D66			HZS11N(B2)	ZENER DIODE		
D66			RD11ES(B2)	ZENER DIODE		
D73			1SS133	DIODE		
D73			1SS176	DIODE		
D74 -79			DSM1A1	DIODE		
D80			HZS5.6N(B2)	ZENER DIODE		
D80			RD5.6ES(B2)	ZENER DIODE		
D81			HZS5.1N(B2)	ZENER DIODE		
D81			RD5.1ES(B2)	ZENER DIODE		
D82			HZS18N(B)	ZENER DIODE		
D82			RD18ES(B)	ZENER DIODE		
D83 ,84			DSM1A1	DIODE		
D85			1SS133	DIODE		
D85			1SS176	DIODE		
D86 ,87			DSM1A1	DIODE		
D88 ,89			1SS133	DIODE		
D88 ,89			1SS176	DIODE		
IC1			LM7001	IC(PLL FREQUENCY SYNTHESIZER)		
IC4			LA1245	IC(AM)		
IC5			M5218P	IC(OP AMP X2)		
IC6			BA401	IC(FM IF)		
IC7 -9			M5218P	IC(OP AMP X2)		

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IC14			NJM4560D	IC(OP AMP X2)		
IC15			LA3350S	IC(FM MPX)		
IC16			UPC78L12J	IC(VOLTAGE REGULATOR/ +12V)		
IC17			NJM4560D	IC(OP AMP X2)		
IC18			MC1495L	IC(MULTIPLIER)		
IC19			M5218P	IC(OP AMP X2)		
IC20,21			NJM4560D	IC(OP AMP X2)		
IC22			M5231TL	IC(VOLTAGE REGULATOR)		
IC23			UPC7805HF	IC(VOLTAGE REGULATOR/ +5V)		
Q1 ,2			3SK122(L)	FET		
Q3			2SK241(Y,GR)	FET		
Q4 ,5			2SK161(GR)	FET		
Q6			2SK241(Y,GR)	FET		
Q8			2SC2003(L,K)	TRANSISTOR		
Q9			2SC2320(E,F)	TRANSISTOR		
Q9			2SC945(A)(Q,P)	TRANSISTOR		
Q10			2SA733(A)(Q,P)	TRANSISTOR		
Q10			2SA999(E,F)	TRANSISTOR		
Q11			2SC2320(E,F)	TRANSISTOR		
Q11			2SC945(A)(Q,P)	TRANSISTOR		
Q12 ,13			2SK364(GR,BL)	FET		
Q14 ,15			2SA733(A)(Q,P)	TRANSISTOR		
Q14 ,15			2SA999(E,F)	TRANSISTOR		
Q16			2SC2320(E,F)	TRANSISTOR		
Q16			2SC945(A)(Q,P)	TRANSISTOR		
Q17			2SA733(A)(Q,P)	TRANSISTOR		
Q17			2SA999(E,F)	TRANSISTOR		
Q18 ,19			2SC2320(E,F)	TRANSISTOR		
Q18 ,19			2SC945(A)(Q,P)	TRANSISTOR		
Q20			2SA733(A)(Q,P)	TRANSISTOR		
Q20			2SA999(E,F)	TRANSISTOR		
Q21			2SC2320(E,F)	TRANSISTOR		
Q21			2SC945(A)(Q,P)	TRANSISTOR		
Q22			2SA733(A)(Q,P)	TRANSISTOR		
Q22			2SA999(E,F)	TRANSISTOR		
Q23 -25			2SC2320(E,F)	TRANSISTOR		
Q23 -25			2SC945(A)(Q,P)	TRANSISTOR		
Q26 ,27			2SK246(Y,GR)	FET		
Q28			2SC2320(E,F)	TRANSISTOR		
Q28			2SC945(A)(Q,P)	TRANSISTOR		
Q34			2SC2320(E,F)	TRANSISTOR		
Q34			2SC945(A)(Q,P)	TRANSISTOR		
Q35			2SA733(A)(Q,P)	TRANSISTOR		
Q35			2SA999(E,F)	TRANSISTOR		
Q36			2SK364(GR,BL)	FET		
Q37 -40			2SA733(A)(Q,P)	TRANSISTOR		
Q37 -40			2SA999(E,F)	TRANSISTOR		
Q41 ,42			2SC2320(E,F)	TRANSISTOR		
Q41 ,42			2SC945(A)(Q,P)	TRANSISTOR		
Q43			2SK246(Y,GR)	FET	TE	
Q44			2SK364(GR,BL)	FET		
Q51 ,52			2SD1302(S,T)	TRANSISTOR		
Q53 ,54			2SA733(A)(Q,P)	TRANSISTOR		
Q53 ,54			2SA999(E,F)	TRANSISTOR		
Q55			2SC2167(O,Y)	TRANSISTOR		

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Q56			2SB764(E,F)	TRANSISTOR		
Q57			2SA733(A)(Q,P)	TRANSISTOR		
Q57			2SA999(E,F)	TRANSISTOR		
Q58			2SD863(E,F)	TRANSISTOR		
Q59			2SC2320(E,F)	TRANSISTOR		
Q59			2SC945(A)(Q,P)	TRANSISTOR		
Q60			2SD863(E,F)	TRANSISTOR		
Q61			2SB764(E,F)	TRANSISTOR		
SUB-CIRCUIT UNIT (X13-5750-11)						
D12 -15	3A,2B		B30-1012-05	LED(SLP-981C-50)MUSIC,UP/DOWN		
C1			C91-0769-05	CERAMIC 0.01UF M		
C2 ,3			CK45FB1H222K	CERAMIC 2200PF K		
C4			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C5			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C6			CE04KW0J222M	ELECTRO 2200UF 6.3WV		
C7			CE04KW1V100M	ELECTRO 10UF 35WV		
C8			C91-0751-05	CERAMIC 330PF K		
C9 -18			C91-0769-05	CERAMIC 0.01UF M		
C19 -25			C91-0751-05	CERAMIC 330PF K		
C26 ,27			C91-0769-05	CERAMIC 0.01UF M		
C28 -31			CF92FV1H104J	MF 0.10UF J		
C32			C91-0751-05	CERAMIC 330PF K		
C33 ,34			C91-0769-05	CERAMIC 0.01UF M		
C35			CK45FF1H103Z	CERAMIC 0.010UF Z		
C36			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C37			C91-0769-05	CERAMIC 0.01UF M		
X1			L78-0209-05	RESONATOR (4.194MHZ)		
CP1			R90-0462-05	MULTI-COMP 47KX8 J 1/4W		
CP2 -4			R90-0291-05	MULTI-COMP 100KX4 J 1/6W		
S1 -19	3A,2B		S40-1064-05	PUSH SWITCH		
S21 -23	3A,2B		S40-1064-05	PUSH SWITCH		
S25	2A		S40-4061-05	PUSH SWITCH (POWER)		
S24	2B		T99-0231-05	SPEED DETECTOR (TUNING)		
D1			HZS3.3N(B)	ZENER DIODE		
D1			RD3.3ES(B)	ZENER DIODE		
D2			1SS133	DIODE		
D2			1SS176	DIODE		
D4 -6			1SS133	DIODE	MTE	
D4 -6			1SS176	DIODE	MTE	
D5 ,6			1SS133	DIODE	K	
D5 ,6			1SS176	DIODE	K	
D9			1SS133	DIODE		
D9			1SS176	DIODE		
D11			1SS133	DIODE		
D11			1SS176	DIODE		
D16			HZS2.7N(B)	ZENER DIODE		
D16			RD2.7ES(B)	ZENER DIODE		
D17 -27			1SS133	DIODE		
D17 -27			1SS176	DIODE		
FL1	1A		FIP12AM15S	FLUORESCENT INDICATOR TUBE		
IC1			UPD4069UBC	IC(INVERTER X6)		

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IC2		*	CXP5016-216S	IC(MICROPROCESSOR)		
IC3 ,4			LC7570	IC(FIP STATIC DRIVER)		
IC5			M5218P	IC(OP AMP X2)		
Q1			2SC2320(E,F)	TRANSISTOR		
Q1			2SC945(A)(Q,P)	TRANSISTOR		
Q2			2SA733(A)(Q,P)	TRANSISTOR	KTE	
Q2			2SA999(E,F)	TRANSISTOR	KTE	
Q2 ,3			2SA733(A)(Q,P)	TRANSISTOR	M	
Q2 ,3			2SA999(E,F)	TRANSISTOR	M	
Q4 ,5			2SC2320(E,F)	TRANSISTOR		
Q4 ,5			2SC945(A)(Q,P)	TRANSISTOR		
Q6 -8			2SA733(A)(Q,P)	TRANSISTOR		
Q6 -8			2SA999(E,F)	TRANSISTOR		
Q9			2SC2320(E,F)	TRANSISTOR		
Q9			2SC945(A)(Q,P)	TRANSISTOR		
Q10			2SA954(L,K)	TRANSISTOR		
Q11 -13			2SC2320(E,F)	TRANSISTOR		
Q11 -13			2SC945(A)(Q,P)	TRANSISTOR		
Q16			2SA733(A)(Q,P)	TRANSISTOR		
Q16			2SA999(E,F)	TRANSISTOR		
TH1			SDT100	THERMISTOR		
IF-DET UNIT (X86-1020-02)						
C1 ,2		*	C93-0012-05	CERAMIC 10000PF 16WV		
C6		*	C93-0012-05	CERAMIC 10000PF 16WV		
C9 -12		*	C93-0012-05	CERAMIC 10000PF 16WV		
C13		*	CK41FB1H221K	CYLND CHIP C 220PF K		
C14 -18		*	C93-0012-05	CERAMIC 10000PF 16WV		
C19			CE04KW0J471M	ELECTRO 470UF 6.3WV		
C20 ,21		*	CC41FSL1H330J	CYLND CHIP C 33PF J		
C22 ,23			CK73EB1E473K	CHIP C 0.047UF K		
C24		*	CC41FUJ1H130J	CYLND CHIP C 13PF J		
C25 ,26		*	C93-0012-05	CERAMIC 10000PF 16WV		
C27			CQ09FS1H271J	POLYSTY 270PF J		
C28		*	CC41FSL1H220J	CYLND CHIP C 22PF J		
C29 -33		*	C93-0012-05	CERAMIC 10000PF 16WV		
C34		*	C93-0013-05	CERAMIC 22000PF 25WV		
C35			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C36 -40		*	C93-0012-05	CERAMIC 10000PF 16WV		
C41			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C42			C90-1334-05	NP-ELEC 47UF 10WV		
C43		*	CC41FSL1H020C	CYLND CHIP C 2.0PF C		
C44			C90-1334-05	NP-ELEC 47UF 10WV		
C45 ,46			CF92FV1H102J	MF 1000PF J		
C48 -51			CF92FV1H102J	MF 1000PF J		
C54 ,55			CE04KW1A470M	ELECTRO 47UF 10WV		
C56		*	C93-0012-05	CERAMIC 10000PF 16WV		
C57		*	C93-0013-05	CERAMIC 22000PF 25WV		
C58		*	CK41FA1H101K	CYLND CHIP C 100PF K		
C59		*	CK41FY1E102M	CYLND CHIP C 1000PF M		
C61 ,62		*	C93-0012-05	CERAMIC 10000PF 16WV		
C63		*	CK41FA1H101K	CYLND CHIP C 100PF K		
C64			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
CF1			L72-0536-05	CERAMIC FILTER	TE	
CF1			L72-0546-05	CERAMIC FILTER	KM	

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CF3			L72-0541-05	CERAMIC FILTER		
CF4			L72-0536-05	CERAMIC FILTER	TE	
CF4			L72-0546-05	CERAMIC FILTER	KM	
L1		*	L92-0018-05	FERRITE CORE		
L4		*	L92-0018-05	FERRITE CORE		
L5			L40-1092-16	SMALL FIXED INDUCTOR(1UH,M)		
L6 ,7		*	L92-0018-05	FERRITE CORE		
L8			L39-0128-05	PEAKING COIL		
L9			L30-0435-05	FM IFT		
L10		*	L92-0018-05	FERRITE CORE		
L11			L30-0434-05	FM IFT		
L12			L32-0294-05	FM OSCILLATING COIL		
L13		*	L92-0018-05	FERRITE CORE		
L15		*	L92-0018-05	FERRITE CORE		
-			R92-0338-05	CLYND CHIP R 0 OHM		
-			R92-0350-05	JUMPER WIRE (RESISTOR TYPE)		
R1		*	RD41FB2B391J	CYLND CHIP R 390 J 1/8W		
R4			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R7		*	RD41FB2B132J	CYLND CHIP R 1.3K J 1/8W		
R11			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R12		*	RD41FB2B821J	CYLND CHIP R 820 J 1/8W		
R13			RD41FB2B220J	CYLND CHIP R 22 J 1/8W	KM	
R13			RD41FB2B330J	CYLND CHIP R 33 J 1/8W	TE	
R14		*	RD41FB2B101J	CYLND CHIP R 100 J 1/8W	TE	
R14			RD41FB2B151J	CYLND CHIP R 150 J 1/8W	KM	
R15			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R16 ,17		*	RD41FB2B132J	CYLND CHIP R 1.3K J 1/8W		
R18 ,19			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R20		*	RD41FB2B221J	CYLND CHIP R 220 J 1/8W	TE	
R21			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R22		*	RD41FB2B362J	CYLND CHIP R 3.6K J 1/8W	TE	
R23			RD41FB2B220J	CYLND CHIP R 22 J 1/8W	KM	
R23			RD41FB2B330J	CYLND CHIP R 33 J 1/8W	TE	
R24		*	RD41FB2B331J	CYLND CHIP R 330 J 1/8W		
R26			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R27		*	RD41FB2B221J	CYLND CHIP R 220 J 1/8W		
R28			RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R29			RD41FB2B471J	CYLND CHIP R 470 J 1/8W		
R30			RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R31 ,32		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W		
R33		*	RD41FB2B101J	CYLND CHIP R 100 J 1/8W		
R34			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R35			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W		
R36 -41			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R42			RD41FB2B224J	CYLND CHIP R 220K J 1/8W		
R43			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R44		*	RD41FB2B221J	CYLND CHIP R 220 J 1/8W		
R45		*	RD41FB2B123J	CYLND CHIP R 12K J 1/8W		
R46		*	RD41FB2B203J	CYLND CHIP R 20K J 1/8W		
R47			RD41FB2B392J	CYLND CHIP R 3.9K J 1/8W		
R48		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W		
R49			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R50			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R51		*	RD41FB2B512J	CYLND CHIP R 5.1K J 1/8W		

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R52			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R53		*	RD41FB2B101J	CYLND CHIP R 100 J 1/8W		
R54		*	RD41FB2B221J	CYLND CHIP R 220 J 1/8W		
R55		*	RD41FB2B331J	CYLND CHIP R 330 J 1/8W		
R56			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R57			RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R58			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R59 ,60		*	RD41FB2B513J	CYLND CHIP R 51K J 1/8W		
R61			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R62 ,63		*	RD41FB2B513J	CYLND CHIP R 51K J 1/8W		
R64		*	RD41FB2B113J	CYLND CHIP R 11K J 1/8W		
R65			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R66 ,67		*	RD41FB2B513J	CYLND CHIP R 51K J 1/8W		
R68 ,69			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R70 ,71		*	RD41FB2B513J	CYLND CHIP R 51K J 1/8W		
R80			RD41FB2B273J	CYLND CHIP R 27K J 1/8W		
R81			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R82			RD41FB2B822J	CYLND CHIP R 8.2K J 1/8W		
R83		*	RD41FB2B123J	CYLND CHIP R 12K J 1/8W	TE	
R84			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R85		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W	TE	
R86			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R87		*	RD41FB2B393J	CYLND CHIP R 39K J 1/8W		
R88			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R90 -93			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R94			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R95			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R96			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R97			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R98		*	RD41FB2B123J	CYLND CHIP R 12K J 1/8W	TE	
R98			RD41FB2B333J	CYLND CHIP R 33K J 1/8W	KM	
R99			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R100			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R101			RD41FB2B103J	CYLND CHIP R 10K J 1/8W	TE	
R101,102			RD41FB2B103J	CYLND CHIP R 10K J 1/8W	KM	
R102			RD41FB2B332J	CYLND CHIP R 3.3K J 1/8W	TE	
R103			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R104			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R105			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R106			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R107			RD41FB2B223J	CYLND CHIP R 22K J 1/8W	KM	
R107			RD41FB2B822J	CYLND CHIP R 8.2K J 1/8W	TE	
R108			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R109			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R110			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R111			RD41FB2B332J	CYLND CHIP R 3.3K J 1/8W	TE	
R111,112			RD41FB2B103J	CYLND CHIP R 10K J 1/8W	KM	
R112			RD41FB2B103J	CYLND CHIP R 10K J 1/8W	TE	
R113			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R124			RD41FB2B220J	CYLND CHIP R 22 J 1/8W	KM	
R124			RD41FB2B330J	CYLND CHIP R 33 J 1/8W	TE	
R125,126			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W		
R127		*	RD41FB2B101J	CYLND CHIP R 100 J 1/8W		
R128		*	RD41FB2B154J	CYLND CHIP R 150K J 1/8W		
R129		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W		

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R132-135			RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R136,137		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W	TE	
R137		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W	KM	
VR1			R12-1070-05	TRIMMING POT.(1K) AUTO STOP		
VR2			R12-5048-05	TRIMMING POT.(100K)NARROW	TE	
VR3			R12-3100-05	TRIMMING POT.(10K)DET		
VR4 ,5			R12-3101-05	TRIMMING POT.(22K)MONO,STEREO		
VR6			R12-1070-05	TRIMMING POT.(1K) MONO		
VR7			R12-3101-05	TRIMMING POT.(22K)STEREO		
D2 -4			1SS184	DIODE		
D5 ,6			RLS-73	DIODE		
D7 ,8		*	1SS226	DIODE		
D9 ,10			KV1320-2	VARIABLE CAPACITANCE DIODE		
D11		*	RD5.1M(B2)	ZENER DIODE		
D12			RLS-73	DIODE		
IC2 ,3			BA401	IC(FM IF)		
IC4			UPC1163HA	IC(IF AMP)		
IC5			LA1231NS	IC(FM IF/DETECTION)		
IC6			NJM4560D	IC(OP AMP X2)		
IC8 ,9			NJM4200D	IC(OP AMP X2)		
IC11-14			M5218P	IC(OP AMP X2)		
Q1		*	2SK302(Y,GR)	FET		
Q3 ,4			2SK211(Y,GR)	FET		
Q5		*	2SK425(X16,X17)	FET	KM	
Q5 -7		*	2SK425(X16,X17)	FET	TE	
Q7		*	2SK425(X16,X17)	FET	KM	

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SPECIFICATIONS

[FM tuner section]

Antenna impedance ..... 75 ohms unbalanced & 300 ohms balanced
FM frequency range ..... 87.5 MHz to 108 MHz
Usable sensitivity (IHF) ..... 10.8 dBf (0.95 μV)
50 dB quieting sensitivity (IHF)
Mono ..... 16.2 dBf (1.8 μV)
Stereo ..... 38.8 dBf (24.0 μV)
Sensitivity (DIN: Europe & U.K. only)
Mono: S/N-26 dB/40 kHz Dev. ..... 0.7 μV
Stereo: S/N-46 dB/46 kHz Dev. ..... 25 μV
Signal to noise ratio (IHF)
Mono (75 kHz Dev.) ..... 92 dB (65 dBf input), 92 dB (85 dBf input)
Stereo (75 kHz Dev.) ..... 78 dB (65 dBf input), 86 dB (85 dBf input)
Signal to noise ratio (DIN: Europe & U.K. only)
Mono (40 kHz Dev.) ..... 78 dB (Unweighted 65.2 dBf input) 82 dB (weighted 65.2 dBf input)
Stereo (46 kHz Dev.) ..... 67 dB (Unweighted 65.2 dBf input) 72 dB (weighted 65.2 dBf input)
Total harmonic distortion (Except Europe & U.K.) (WIDE)
Mono (75 kHz Dev.)
1 kHz 0.007%
50 Hz ~ 10 kHz 0.02%
Stereo (75 kHz Dev.)
1 kHz 0.009%
50 Hz ~ 10 kHz 0.05%
Total harmonic distortion (DIN: Europe & U.K. only) (WIDE)
Mono (40 kHz Dev., 1 kHz) 0.02%
Stereo (46 kHz Dev., 1 kHz) 0.05%
Capture ratio (Except Europe & U.K.)
WIDE ..... 1.0 dB
NARROW ..... 2.5 dB
Capture ratio (Europe & U.K. only)
WIDE ..... 2.0 dB
NARROW ..... 3.5 dB
Alternate channel selectivity (IHF: Except Europe & U.K.)
WIDE ..... 60 dB (±400 kHz)
Alternate channel selectivity (DIN: Europe & U.K. only)
NARROW ..... 75 dB (±300 kHz)
Stereo separation
WIDE: 1 kHz ..... 65 dB
Stereo separation (DIN: Europe & U.K. only)
WIDE: 1 kHz, (65.2 dBf input) ..... 54 dB
6.3 kHz, (65.2 dBf input) ..... 44 dB
Frequency response ..... 20 Hz to 15 kHz ±0.5 dB
Spurious rejection ratio (98 MHz) ..... 105 dB
Image rejection ratio (98 MHz) ..... 82 dB
IF rejection ratio (98 MHz) ..... 110 dB
AM suppression ratio ..... 76 dB
Subcarrier suppression ratio ..... 70 dB
Subcarrier suppression ratio (DIN: Europe & U.K. only)
19 kHz, 46 kHz Dev. ..... 55 dB
38 kHz, 46 kHz Dev. ..... 68 dB
Output level/impedance at 1 kHz, 100% Dev.
Fixed ..... 600 mV/3.3 kohms
Limitting Level (Europe & U.K. only)
(−3 dB point, 40 kHz Dev.) ..... 0.45 μV

[AM tuner section]

Frequency range ..... 530 kHz ~ 1610 kHz (Except Europe & U.K.) or 531 kHz ~ 1602 kHz (Europe & U.K.)
Usable sensitivity (Loop) ..... 10 μV (250 μV/m)
Signal to noise ratio (30% Mod; 1 mV input) ..... 55 dB
Total harmonic distortion 0.25%
Image rejection ratio (Loop) ..... 40 dB
Selectivity (IHF) ..... 30 dB
Output level/impedance (400 Hz, 30% Mod.) ..... 180 mV, 3.3 kohms

[General]

Power consumption ..... 20 W
Dimensions ..... W: 440 mm (17-5/16″) H: 78 mm (3-1/16″) D: 331 mm (13-1/16″)
Weight (Net) ..... 4.0 kg (8.8 lb)

Note:
We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.